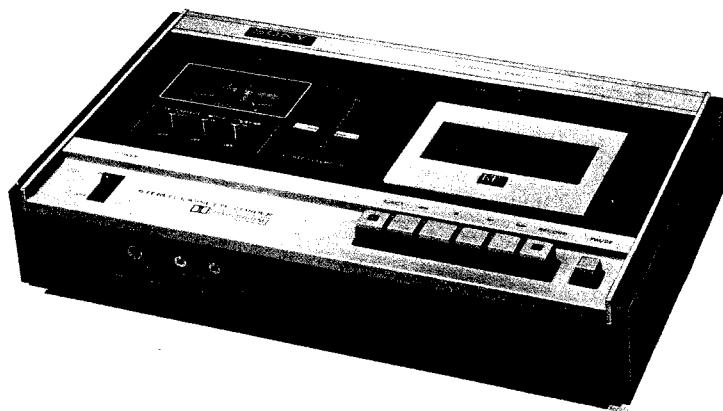


TC131SD



SPECIFICATIONS

Power Requirements:	AC 120V 60 Hz (USA, Canada) 110, 127, 220, 240 V 50/60 Hz (AEP, AUS) 100, 110, 120, 127, 220, 240 V 50/60 Hz (E)	Outputs:	LINE OUT (2) Load impedance: greater than 10 kΩ Level: 0.775 V (0 dB) with 100 kΩ load
Power Consumption:	11W	HEADPHONE	Load impedance: 8 Ω Level: 31 mV (-28 dB)
Track:	Two-track two-channel stereo	REC/PB Connector:	Input impedance: less than 10 kΩ Output impedance: less than 50 kΩ
Frequency Response:	With chromium dioxide cassette 40 ~ 15000 Hz (NAB) 50 ~ 12000 Hz (DIN) With ordinary cassette 40 ~ 13000 Hz (NAB) 50 ~ 10000 Hz (DIN)	Semiconductors:	32 transistors and 20 diodes
Overall Signal-to-Noise Ratio:	48 dB (DOLBY NR switch to OFF) (With DOLBY NR switch to ON, S/N ratio improves 5 dB at 1 kHz and 10 dB at 5 kHz.)	Record/playback Head:	PF145-3602A6 (ferrite)
Wow and Flutter: (RMS weighted)	0.22% (NAB) ±0.38% (DIN)	Erase Head:	EF135-36
Record Bias Frequency:	Approximately 85 kHz	Motor:	D-015G (DC governor)
Inputs:	MICROPHONE (2) Impedance: low Maximum sensitivity: 0.2 mV (-72 dB) LINE IN (2) Impedance: 100 kΩ or more Maximum sensitivity: 0.06 V (-22 dB)	Accessories:	Connection cord RK-74 (2) Printed matters Cleaning tips (AEP, Canada, E, AUS)
		Dimensions:	388 (w) x 95 (h) x 230 (d) mm 15 5/16 (w) x 3 3/4 (h) x 9 1/16 (d) inches
		Weight:	4.1 kg, 9 lb 1 oz (USA, Canada) 4.5 kg, 9 lb 15 oz (AEP, E, AUS)

SERVICE MANUAL

658

MC-Service

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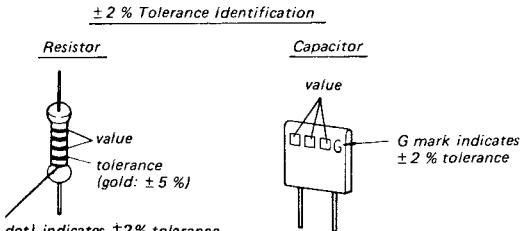
MODEL IDENTIFICATION (See specification label)

Model	Identification on specification label
USA	AC 120V 60Hz
Canada	AC 120V 60Hz
E	AC 100, 110, 120, 127, 220, 240V 50/60 Hz
AEP	110, 127, 220, 240V 50/60 Hz 
AUS	110, 127, 220, 240V 50/60 Hz

CAUTION

1. Record and playback level adjustments should be carefully made. The levels must be as specified for correct DOLBY circuit operation.
2. When replacing resistors and capacitors needing $\pm 2\%$ tolerance, use only those with red line (or dot) or G mark, as DOLBY system requires precise circuit operation.

When ordering replacement parts, use PART NUMBERS listed in Parts Lists or shown in EXPLODED VIEWS.
Parts List reference numbers should not be used.



Red line (or dot) indicates $\pm 2\%$ tolerance selected from resistors of $\pm 5\%$ tolerance.

All screws in this service manual are Phillips type (cross recess type) unless otherwise indicated.
(-) : slotted head

SECTION 1 OUTLINE

1.1. DOLBY NOISE REDUCTION SYSTEM *

1. OUTLINE

The TC-131SD uses a DOLBY NOISE REDUCTION system to reduce hissing noise during low level or zero level sound passages. This system pre-emphasizes the low-level high-frequency recorded signals which are disturbed by hissing noise. During playback, it de-emphasizes these signals along with tape hiss and thus improves signal-to-noise ratio.

(1) The DOLBY system differs from other noise reduction systems as follows:

* High-fidelity sound cannot be obtained if the DOLBYIZED tape is played back on other systems or vice versa.

* Signal levels must be precisely adjusted since these levels control the DOLBY system.

(2) The DOLBY system of the TC-131SD has the following features:

The DOLBY unit (DCB-020) contains a variable high-pass filter controlled by input level. During Record:

The DOLBY unit (DCB-020) is series-connected to boost the low-level high-frequency signal.

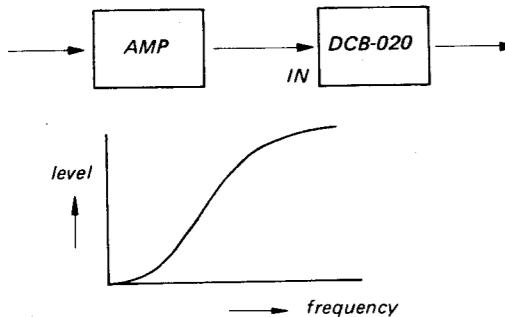


Fig. 1-1. Unit connection in record mode and frequency response

During Playback:

The DOLBY unit is connected as a negative feedback circuit to decrease the gain for low-level high frequency signals boosted during record.

* The word DOLBY is a trade mark of Dolby Laboratories, Inc.

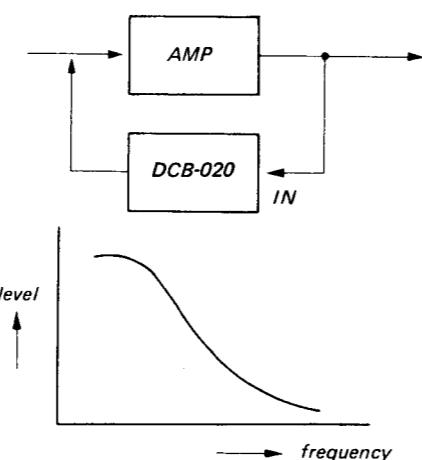


Fig. 1-2. Unit connection in playback mode and frequency response

2. CIRCUIT OPERATION

(Refer to schematic diagram on page 30.)

Stage/Control

R501, R502

Function

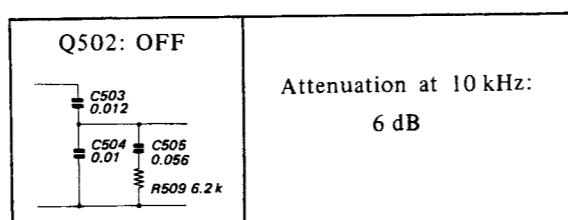
These resistors attenuate signal level 20 dB. High resistance value is due to high output impedance of LINE OUT jack since DOLBY unit input is connected to LINE OUT jack.

Q501

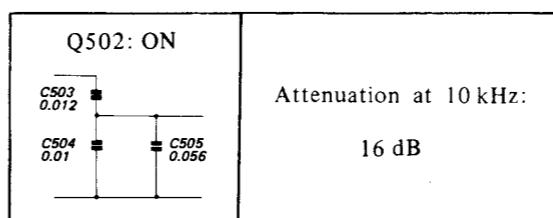
This emitter-follower amplifier is an impedance-translator for the low-impedance high-pass filter.

filter
C503, C504, C505
R509, Q502

Q502 changes the filter curve determined by C503, C504, C505 and R509.



Attenuation at 10 kHz:
6 dB



Attenuation at 10 kHz:
16 dB

Q502-control

amplifier
Q505, Q506, Q507

rectifier
D501, D502

C507

release time
C517, R534

C515, R530

C518, R537

CS13, R525

flat amplifier
Q503, Q504

This high gain (more than 50 dB) amplifier is used for flat frequency response. Normal input level of this amplifier is -56 dB (1.2 mV) at 1,000 Hz.

These diodes performing as a voltage doubler rectify amplified signals to obtain a dc component greater than 1V.

This capacitor prevents abnormal oscillation of high frequency signals. The capacitance value is small (6 pF) because the amplifier requires a short attack time.

C517 and R534 effect a release time of about 10 m sec.

C515 and R530 connected to the negative feedback circuit of Q502-control amplifier boost the high frequency signal input attenuated by the filter.

For increasing-transient inputs, C518 and R537 reduce attack time to 25 μ sec. When signal level increases suddenly, attack time—time until DOLBY system begins to operate—causes a click noise due to over-shoot as shown in Fig. 1-3. To prevent

the click noise, by-pass circuits are added. See Fig. 1-4.

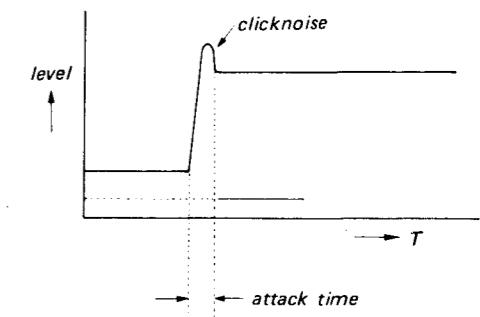


Fig. 1-3.

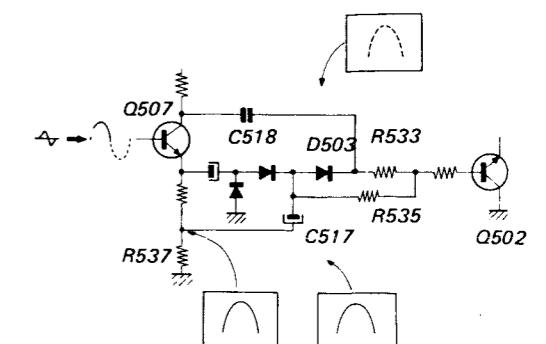


Fig. 1-4.

R525 is series-connected to the by-pass capacitor C513 of Q505 emitter. R525 and a small value coupling-capacitor C512 decrease the control amplifier gain of low frequencies.

This stage amplifies the filter output signals.

1-2. AUTOMATIC SHUT-OFF MECHANISM OPERATION

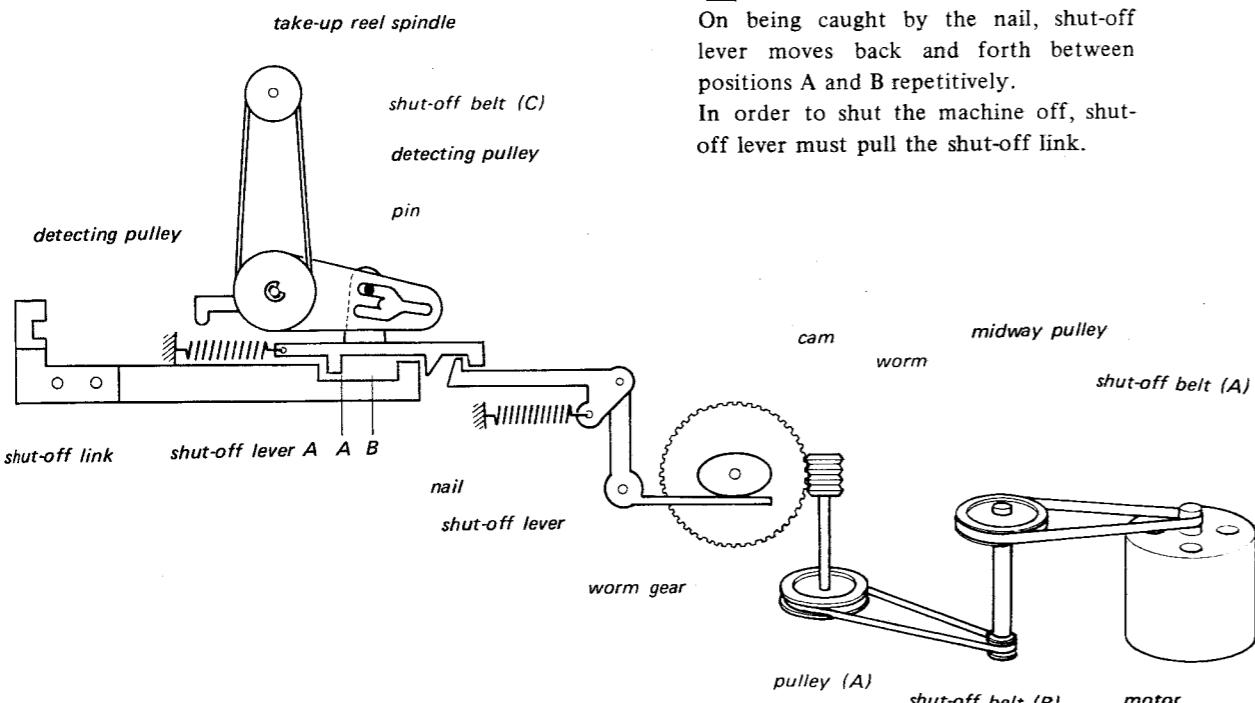
The TC-131SD mechanism is designed so that the unit will shut itself off automatically at tape end in any mode by detecting stop mode of take-up reel spindle.

As an example, the mechanism operation in playback mode is illustrated step by step.

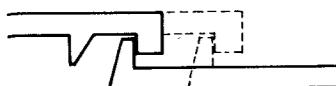
Playback – Normal Operation –

4

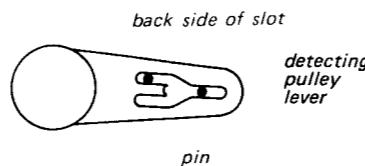
As long as tape remains on the spindle, take-up reel spindle continues to rotate. Shut-off belt (C) transmits turning force to the detecting pulley and then to the detecting pulley lever.



2



Detecting pulley lever operation in playback mode.



5

As a result of rotational friction on the detecting pulley lever, the pin always wants to hug the back side of the slot, (upper side as shown). The constant motion of a shut-off lever A slides the pin back and forth along the back side of the slot.

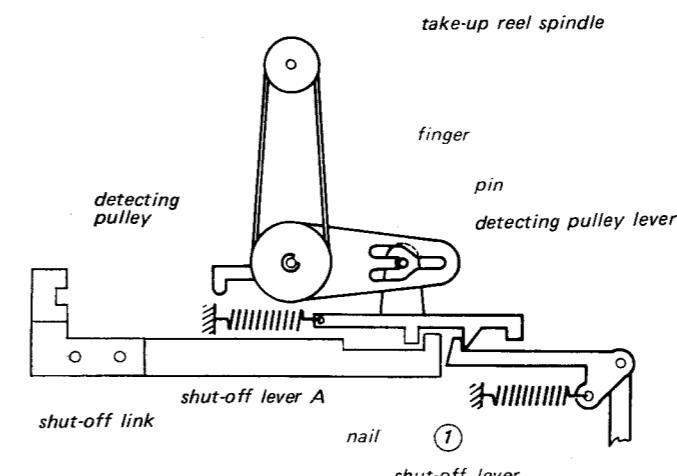
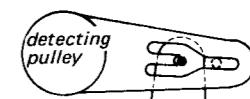
3

On being caught by the nail, shut-off lever moves back and forth between positions A and B repetitively. In order to shut the machine off, shut-off lever must pull the shut-off link.

Playback – Automatic Shut-off Operation –

6

When tape runs out on the spindle, the turning force on the detecting pulley lever halts. When the pin starts to move inward in the slot, it no longer wants to hug the side of the slot as previously, but stops in the middle on the finger.



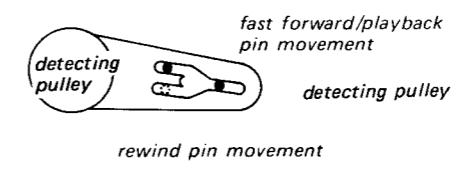
7

The finger holds the pin (and shut-off lever A) playback far enough so that the nail is able to catch shut-off lever A in position ① as shown.

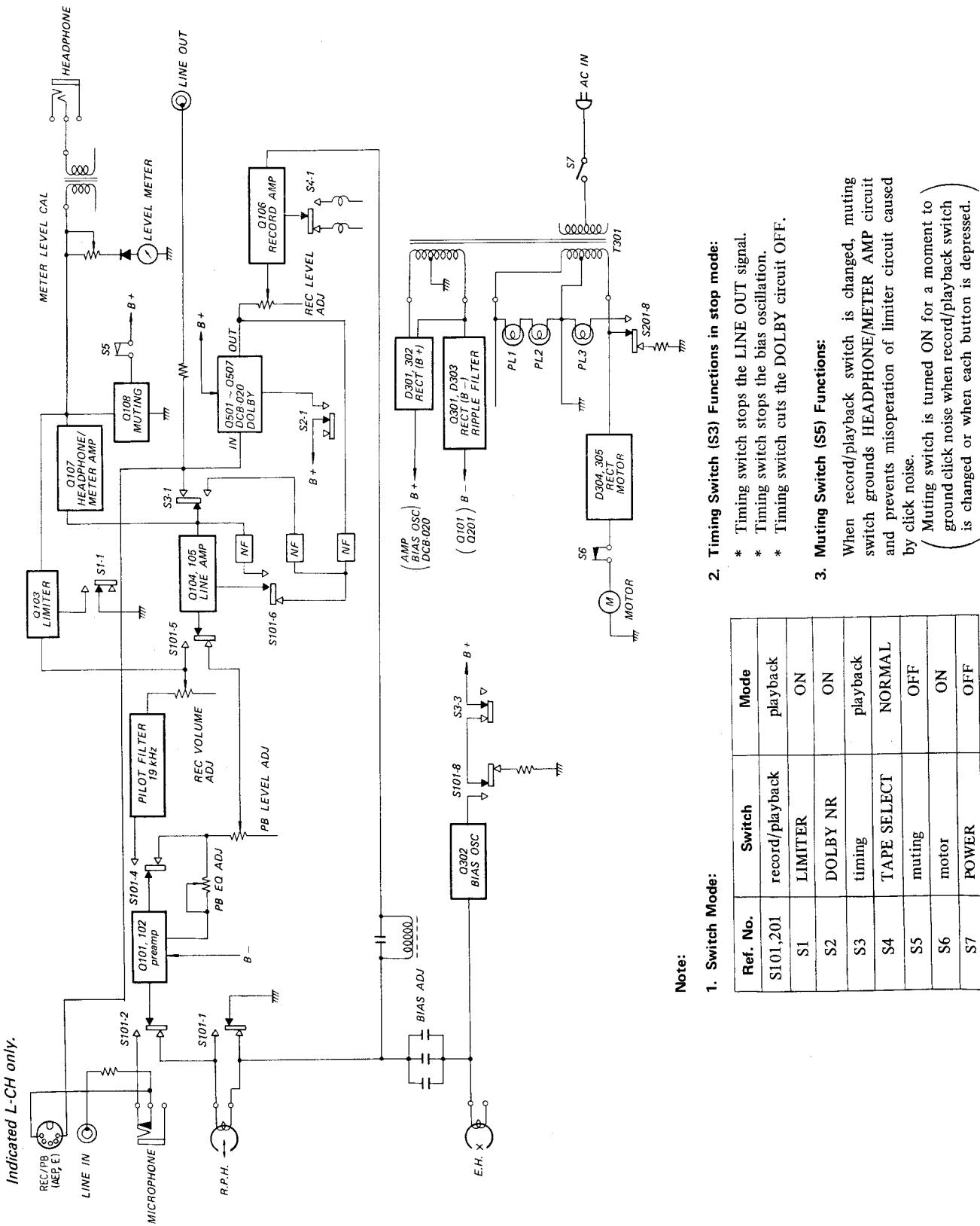
8

Now shut-off lever A can move far enough to pull the shut-off link which shuts the machine off.

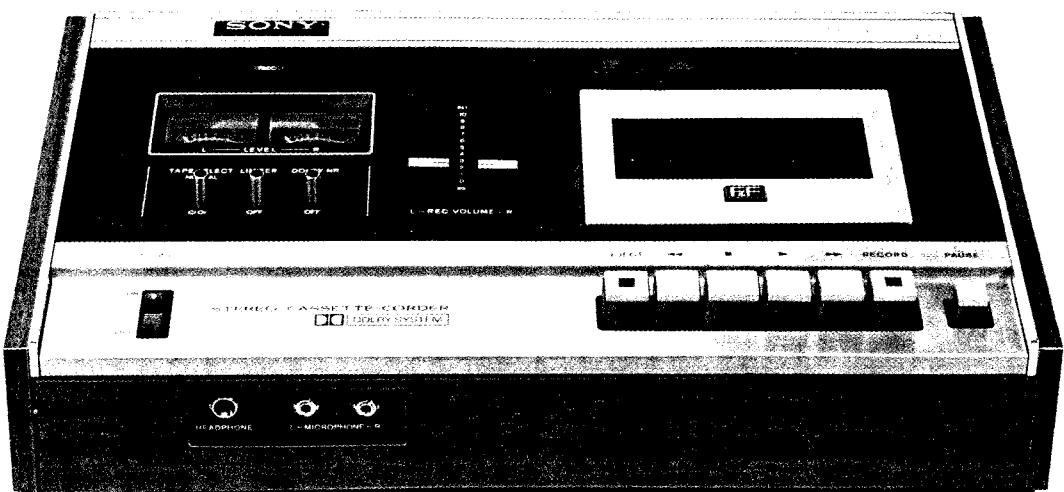
For fast forward, automatic operation is the same as for the playback mode. For rewind mode, the pin hugs the opposite side of the slot, as shown below.



1-3. BLOCK DIAGRAM

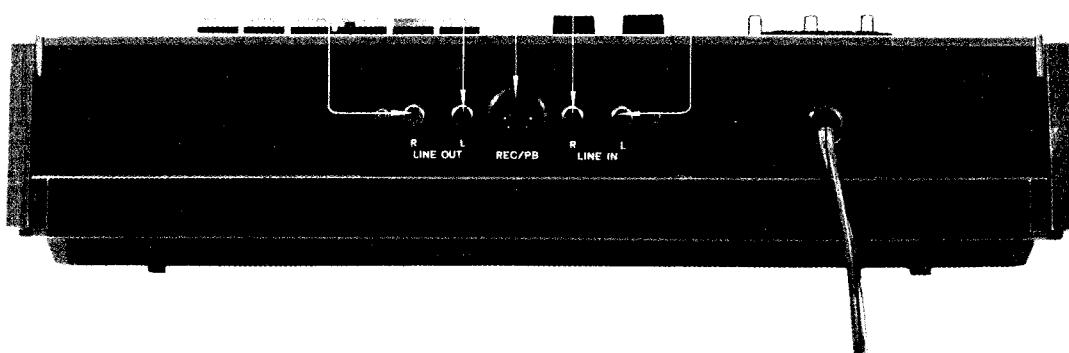


1-4. EXTERNAL VIEW (1)



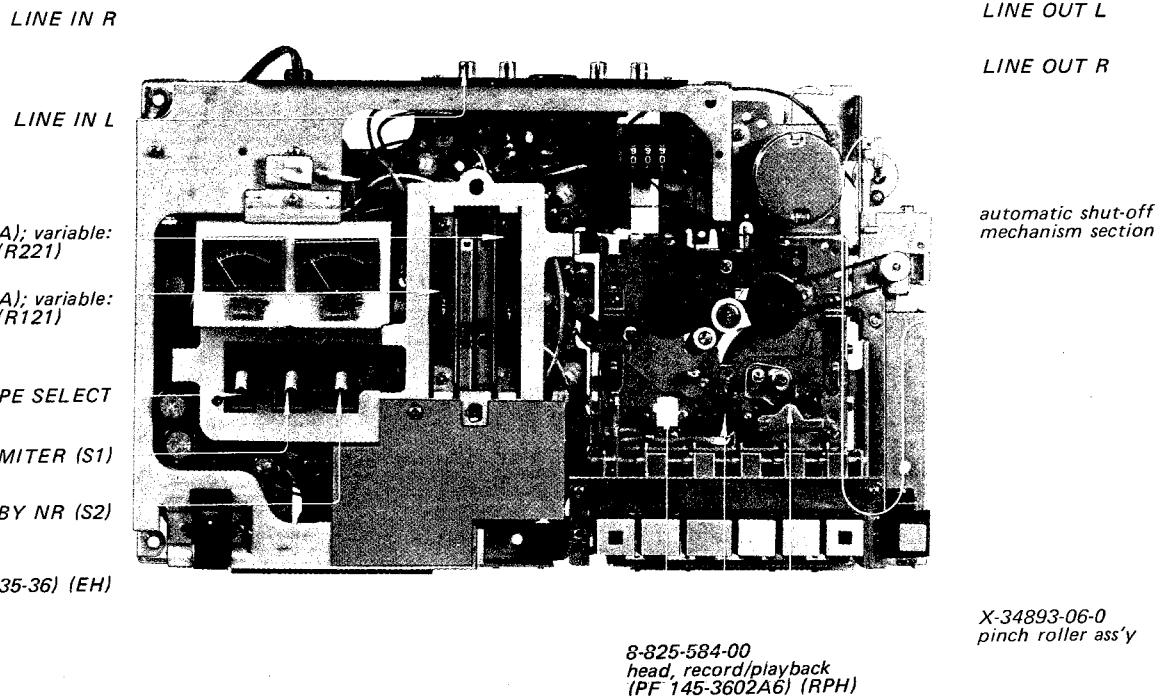
1-5. EXTERNAL VIEW (2)

(CNJ301)
(AEP, AUS, E)
(CNJ202) (CNJ102) (CNJ201) (CNJ101)



1-6. INTERNAL VIEW (1)

CNJ301
(AEP, AUS, E)

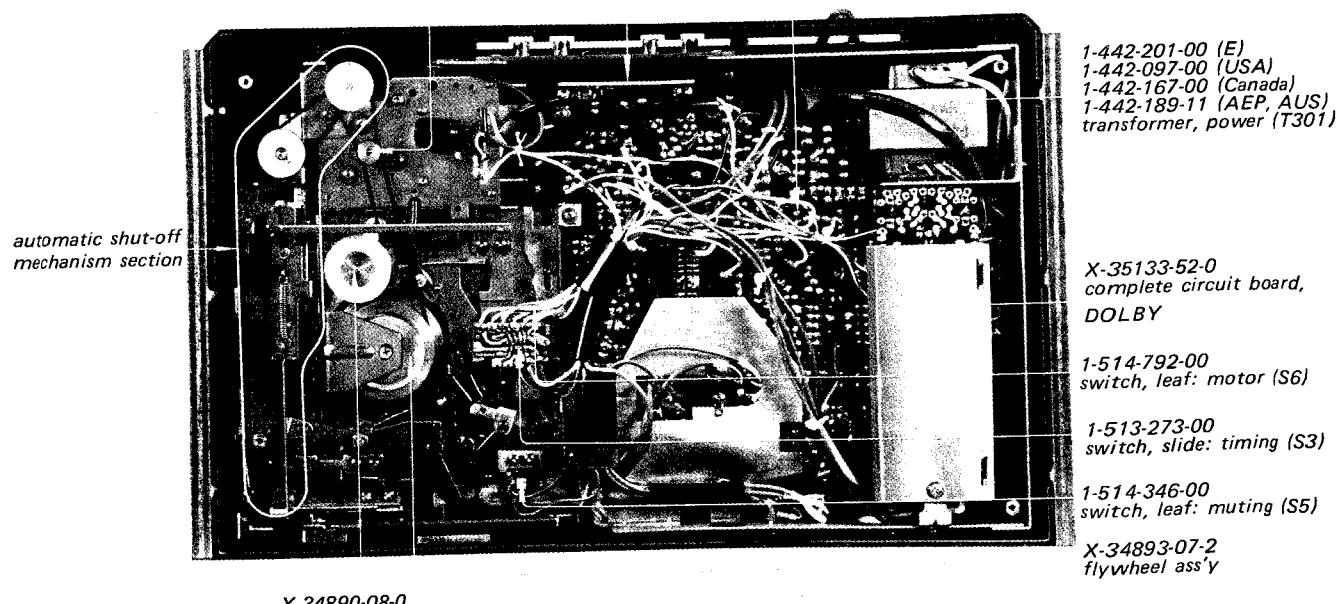


1-7. INTERNAL VIEW (2)

3-533-357-01 (no groove)
3-533-357-11 (one groove)
3-533-357-21 (two grooves)
3-533-357-31 (three grooves)
pulley, motor

1-582-440-00
printed circuit board, jack

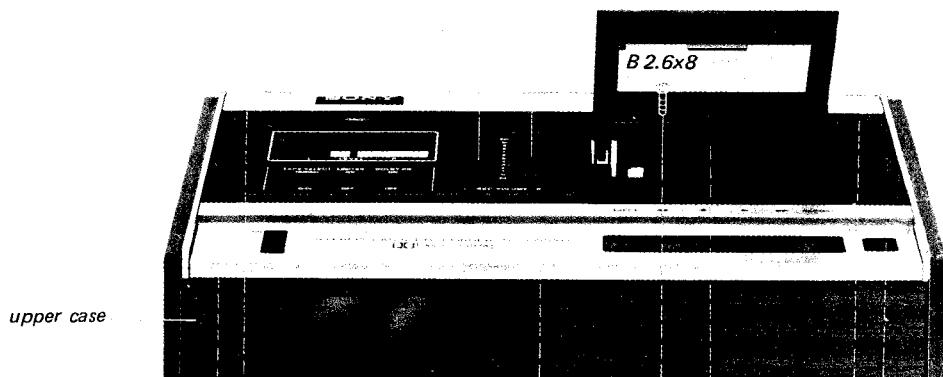
X-3533-51-0
complete circuit board, amp



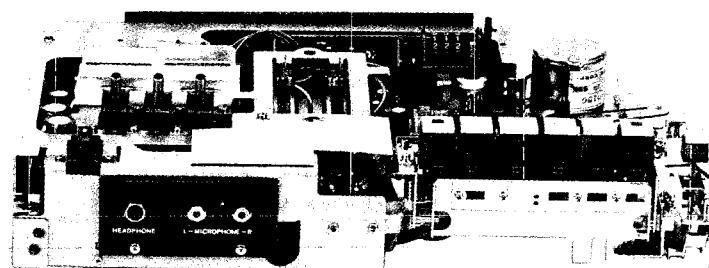
SECTION 2 DISASSEMBLY

2-1. CASE REMOVAL

REC VOLUME knob



unit



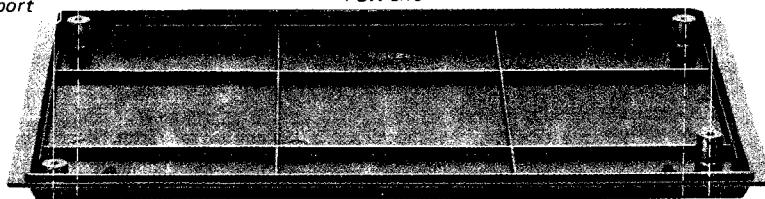
PSW 3x6

case support

case support

PSW 3x6

bottom cover



B 3x8

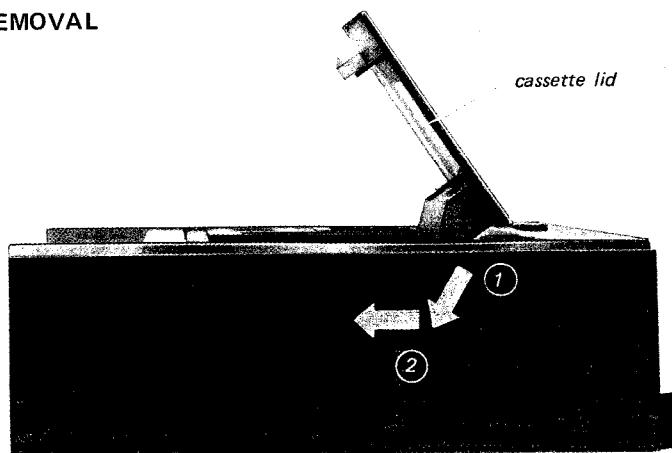
B 3x8

B 3x8

B 3x8

2-2. CASSETTE LID REMOVAL

cassette lid



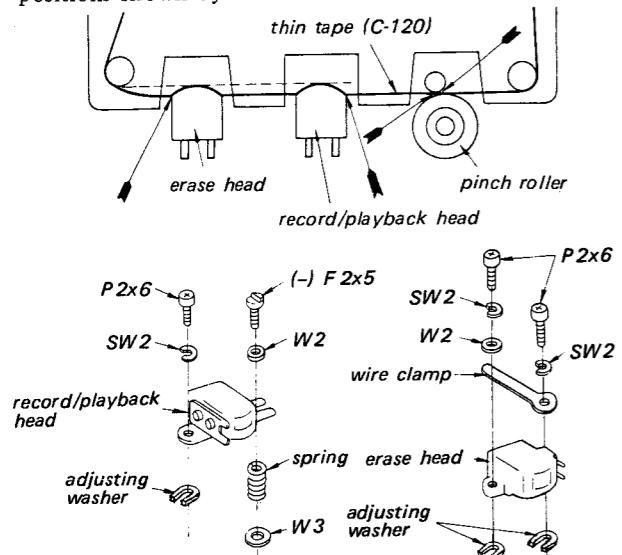
SECTION 3 ADJUSTMENTS

3-1. MECHANICAL ADJUSTMENTS

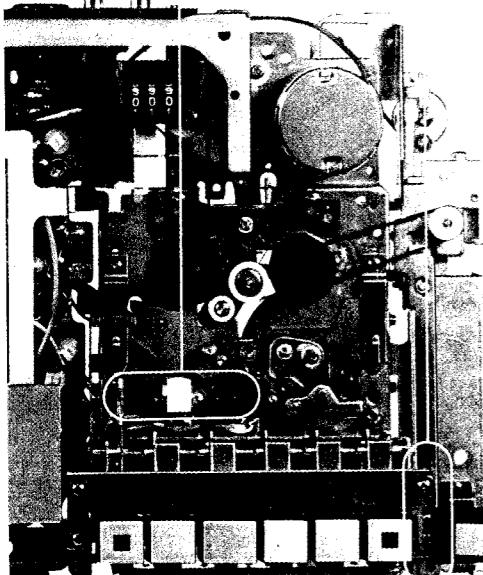
Head Height Adjustment

— playback mode —

Adjust by removing or adding the adjusting washer so that tape straight runs without curl at positions shown by arrows.

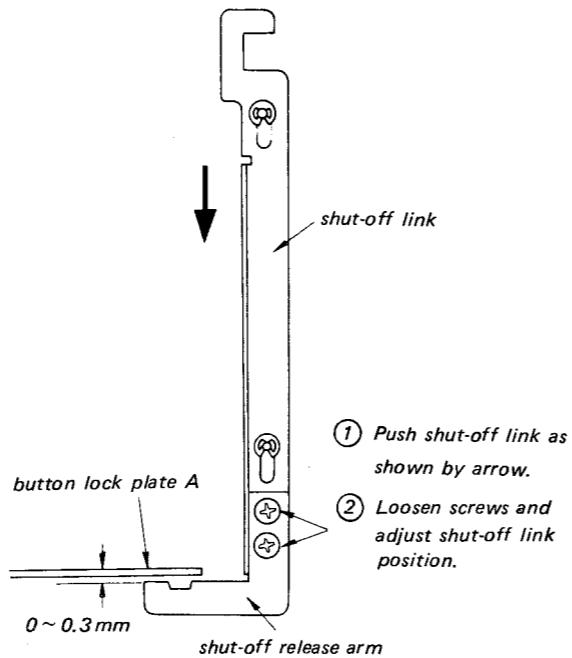


Part. No.	Description
3-513-237-01	adjusting washer ($t = 0.1$)
3-513-237-11	adjusting washer ($t = 0.2$)



Shut-off Release Arm Adjustment

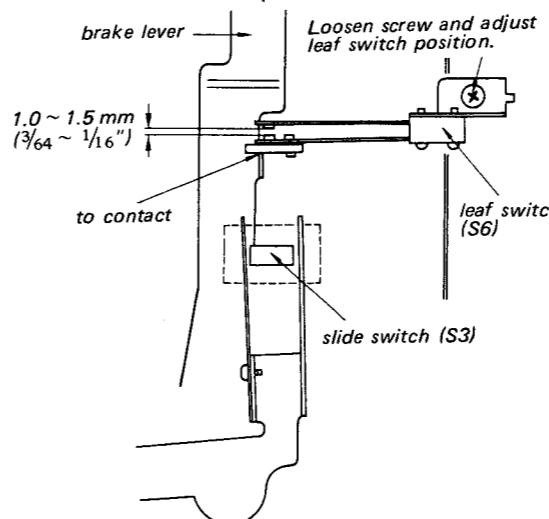
— stop mode —



Note: If above adjustment is not correctly made, automatic shut-off mechanism will operate during pause mode.

Motor Leaf Switch (S6) Adjustment

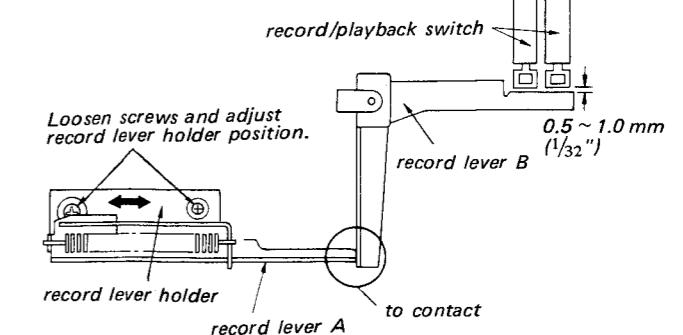
— stop mode —



Note: When slowly depressing forward button, ensure that slide switch is changed after leaf switch is closed.

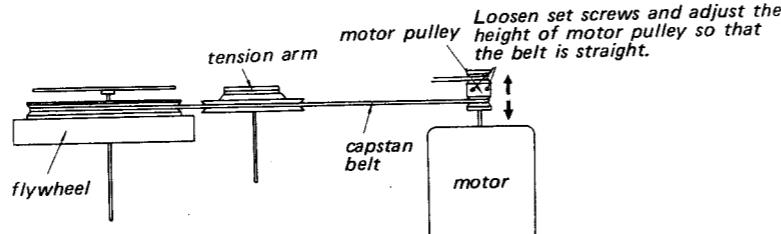
Record Lever Holder Adjustment

— stop mode —



Motor Pulley Height Adjustment

— stop mode —



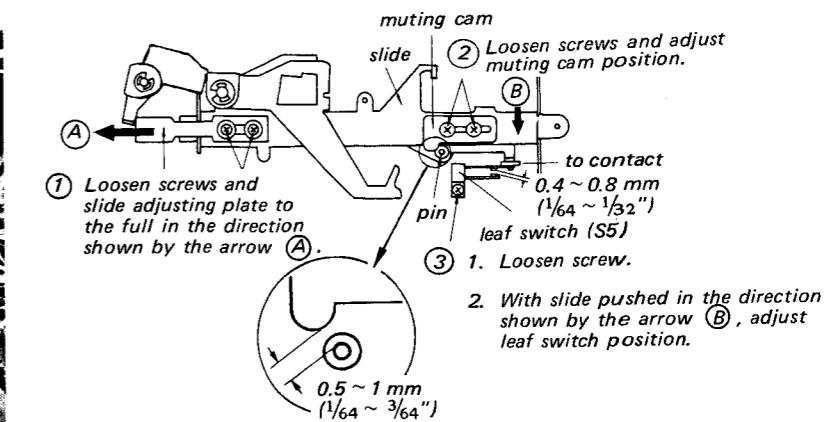
Note: Ensure that capstan belt is installed without twist and dirt.



Muting Leaf Switch (S5) Adjustment

— stop mode —

Perform in numerical order.



Note: After this adjustment.

1. When depressing RECORD button without tape cassette, ensure that record/playback switch is not changed.
2. When depressing RECORD button with a tape cassette that has safety tab, ensure that record/playback switch is changed.

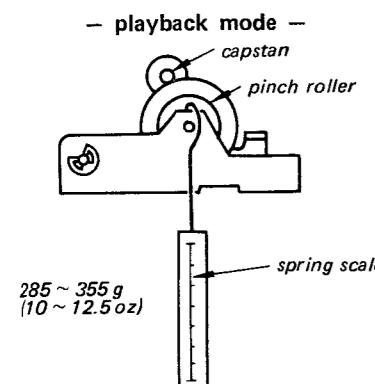
Checks After Mechanical Adjustments (1)

Button Operation Check

Depress	Results
forward button fast forward button rewind button REC button	locked
stop button EJECT button	not locked
PAUSE button	{ first depressinglocked second depressingreleased

Mode	Depress	Results
playback	fast forward button	fast forward mode
	rewind button	rewind mode
	stop button	stop mode
	REC button	not depressed
	EJECT button	playback mode with cassette lid opened
fast forward	forward button	playback mode
	rewind button	rewind mode
	stop button	stop mode
	EJECT button	eject, stop mode
	REC button	not depressed
rewind	forward button	playback mode
	fast forward button	fast forward mode
	stop button	stop mode
	EJECT button	eject, stop mode
	REC button	not depressed
record	fast forward button	fast forward mode
	rewind button	rewind mode
	stop button	stop mode
	EJECT button	record mode with cassette lid opened

Pinch Roller Pressure Measurement

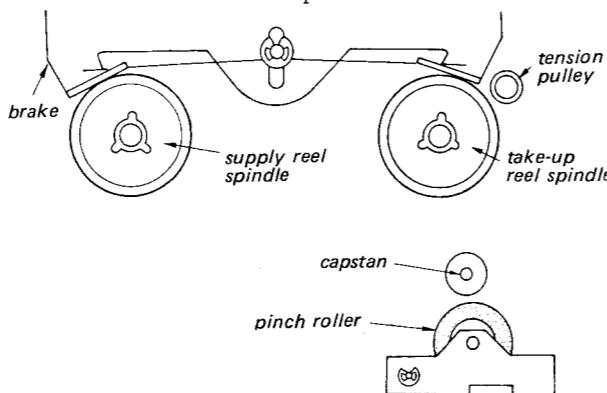


Note: The pressure should be measured just when the pinch roller contacts the capstan after being separated.

Forward Button Timing Check

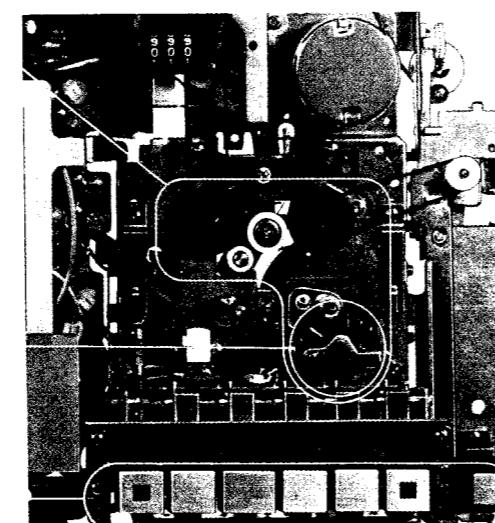
When slowly depressing forward button, ensure that the following functions occur in the numerical order. (or simultaneously.)

1. Brake separates from each reel spindle.
2. Tension pulley contacts take-up reel spindle.
3. Motor switch turns on and capstan starts to rotate.
4. Pinch roller contacts capstan.



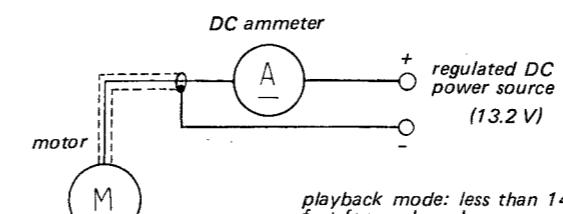
Torque Measurement

Mode	Torque
Playback	40 ~ 60 g · cm (0.56 ~ 0.83 oz · inch)
Fast forward Rewind	70 ~ 150 g · cm (0.84 ~ 2.1 oz · inch)



Motor Current Measurement

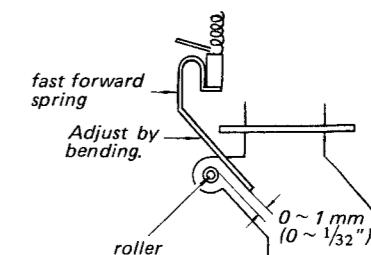
Measure current as shown.



playback mode: less than 140 mA
fast forward mode) less than 280 mA
rewind mode

Fast Forward Spring Check

— stop mode —

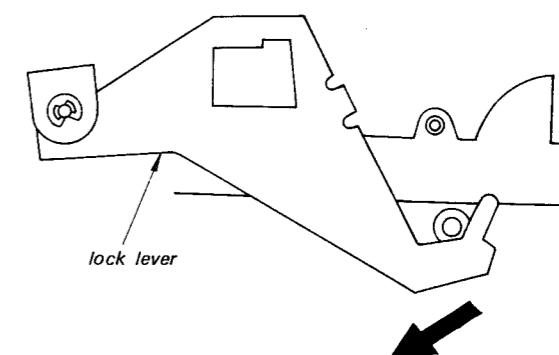


Note: When fast forward and rewind torques are poor, clean idlers and adjust fast forward spring.

Lock Lever Operation Check

— record mode —

1. With forward button kept depressed, depress stop button. (REC button is only released and record function is not completely released.)
2. With forward button gradually returned, ensure that lock lever releases in the direction shown by the arrow.



Note: If lock lever does not release, REC button may not be depressed with a cassette loaded.

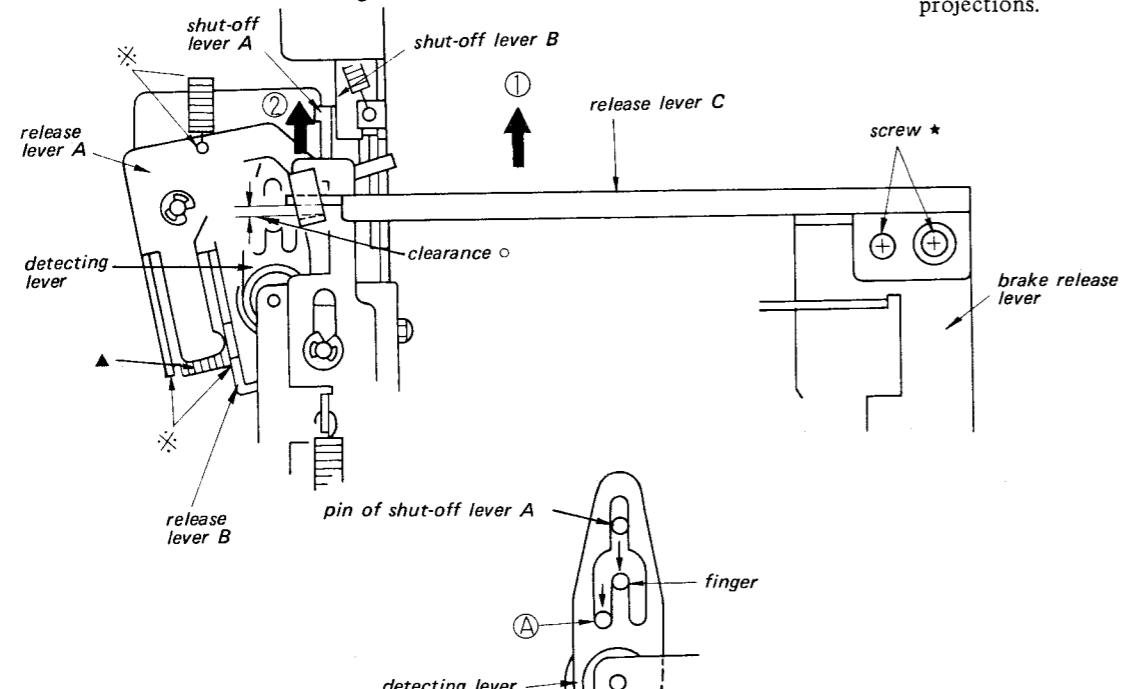
Checks After Mechanical Adjustments (2)

Automatic Shut-off Mechanism Operation Check

Release-Lever-C Operation Check

1. Turn POWER switch OFF and place the unit in stop mode.
2. Pull brake release lever in the direction shown by the arrow ① to obtain the clearance marked ○.
3. Pull shut-off lever A in the direction shown by the arrow ② to interlock shut-off lever B with shut-off lever A.
4. Lift shut-off lever B to stop the pin of shut-off lever A at finger of detecting lever.
5. When returning release lever C, ensure that the pin of shut-off lever A returns to position A.

Note: Release Function Order:
release lever C → release lever A →
release lever B → detecting lever



If the pin of shut-off lever A does not return to position A in Step 5, automatic shut-off mechanism will operate, as soon as mode changes from stop to playback, fast forward or rewind.

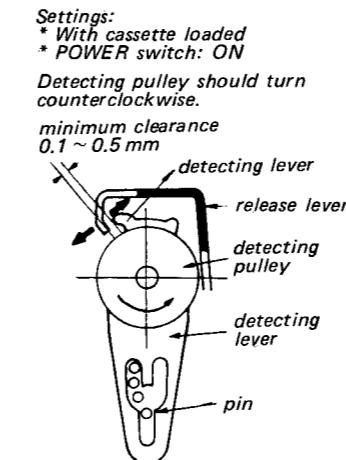
This trouble is caused by the following:

Cause	Remedy
Lengthened spring marked ▲	Replace.
Clearance marked ○	Loosen screws marked ★ and adjust release-lever-C position for no clearance.
Unsmooth return of brake release lever	Make the lever free from being caught by other levers or projections.

Detecting-Lever and Release-Lever-B Operation Check

1. Rewind Mode

Check as shown below:

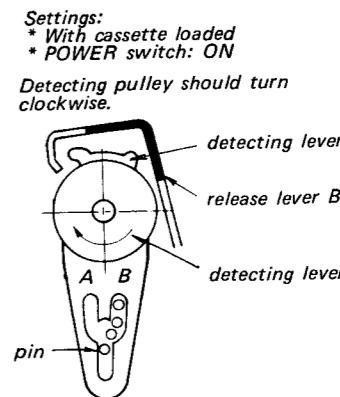


If necessary, adjust by bending release lever B. (Do not bend the portion of release lever B shown in black.)

Note: If the above adjustment is not correctly made, automatic shut-off mechanism will operate during rewind mode.

2. Playback and Fast Forward Modes

Check as shown below:

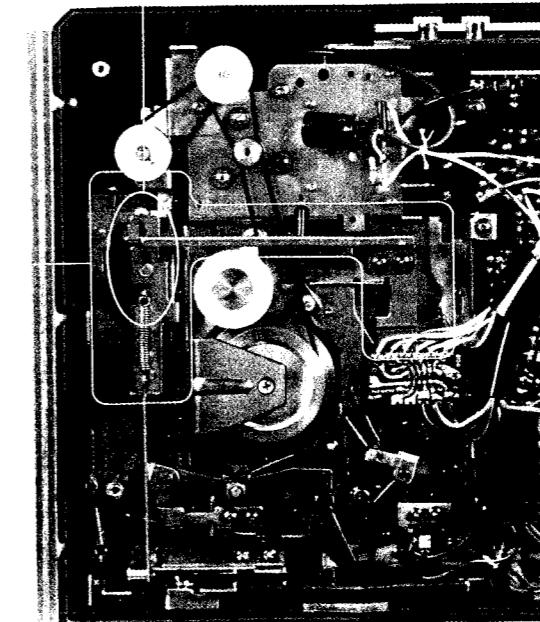


- Ensure that the pin moves along the slot B.

If the pin does not move along the slot B, automatic shut-off mechanism will operate during playback and fast forward modes.

Check the following:

- Friction between detecting pulley and detecting lever should not be weak.
- Detecting pulley belt should not slip.



Shut-off Lever-A and Shut-off Lever-B

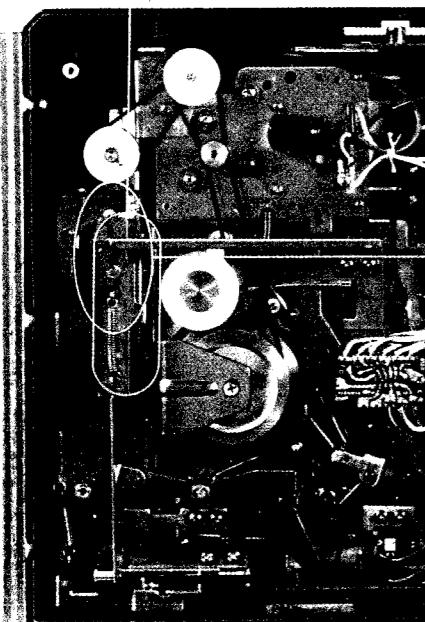
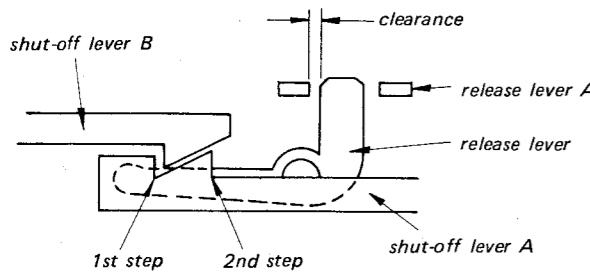
Operation Check (1)

— playback, fast forward and rewind mode — (during tape running)

Check the following:

1. Shut-off lever B should completely interlock shut-off lever A at 1st step.
2. The release lever should not push shut-off lever B.
3. There should be a clearance between the release lever and release lever A.

Note: If the above checks are not satisfied, automatic shut-off mechanism will operate during tape running or will not operate even at end of tape. Perform Release-Lever-C Operation Check on Page 15.



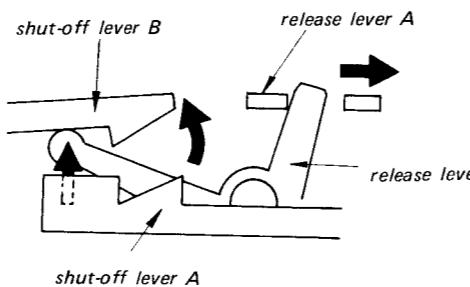
Shut-off Lever-A and Shut-off Lever-B

Operation Check (2)

With stop button or PAUSE button depressed in playback, fast forward and rewind mode, and with automatic shut-off mechanism operated at end of tape.

Check the following:

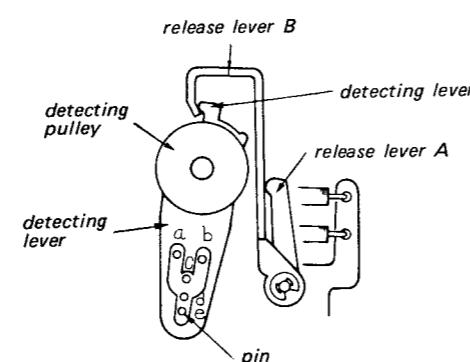
1. Release lever A should push the release lever which pushes shut-off lever B.
2. Shut-off lever B should repeat constant motion not to interlock shut-off lever A.



Release-Lever-B Operation Check.

Check the following:

1. When the pin comes at position "d" or "e" before automatic shut-off operation at end of tape in playback mode, the pin should be stopped at position "b" by depressing PAUSE button.
2. When the pin comes at position "d" in playback, fast forward and rewind modes, the pin should be stopped at position "a" or "b" by depressing stop button.
3. After automatic shut-off mechanism has operated at end of tape in playback, fast forward and rewind modes, the pin should be stopped at position "b".



3-2. ELECTRICAL ADJUSTMENTS AND MEASUREMENTS

Precaution:

1. Clean the following parts with an alcohol moistened swab:

* record/playback head	* pinch roller
* erase head	* rubber belts
* capstan	* idlers
2. Demagnetize record/playback head with a head demagnetizer.
3. Do not use magnetized screwdriver for adjustments.
4. After adjustments, apply locking paint to the parts adjusted.
5. Adjustments should be performed in the order arranged in this service manual.
6. Adjustments and measurements should be performed for both L-CH and R-CH with rated power supply voltage unless otherwise specified.
7. Record and playback level adjustments should be carefully performed. In case the levels are not as specified, DOLBY circuit will not correctly operate.

Test Equipment/Tools Required:

audio oscillator (af osc)
VTVM
digital frequency counter
oscilloscope
wow meter
1 kHz } bandpass filter
5 kHz }
attenuator (600Ω)
non-magnetic screwdriver
blank tape cassette (completely erased with bulk eraser) C-60 HF
C-60 CR
resistors 100kΩ (1/4W), 600 Ω (1/4W)
300 Ω (1/4W),

SONY test tapes

SPC-4 (1kHz, 0 dB)
WS-48 (3kHz, 0 dB)
P-4-L81 (333Hz, 0 dB)
P-4-A81 (6.3kHz, -10 dB)

Normal Input Level

	MICROPHONE	LINE IN
impedance	600 Ω	100 kΩ or more
input level	-60 dB (0.77 mV)	-10 dB (0.25 V)

Normal Output Level

	LINE OUT
load impedance	100 kΩ
output level	0 dB (0.775 V)

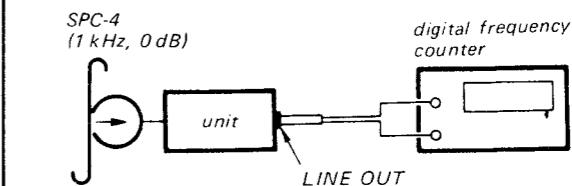
1. Tape Speed Adjustment

Settings:

LIMITER switch: OFF
TAPE SELECT switch: NORMAL
DOLBY NR switch: OFF

Procedure:

1. Mode: Playback



Specification: 985 ~ 1015 Hz
Frequency difference between beginning and end is within 10 Hz.

2. If necessary, change motor pulley.

Part No.	Motor Pulley (groove)	Tape Speed
3-533-357-01		faster
3-533-357-11		
3-533-357-21		
3-533-357-31		slower

Note: After the motor pulley is changed, perform Motor Pulley Height Adjustment on Page 11.

2. Head Azimuth Adjustment

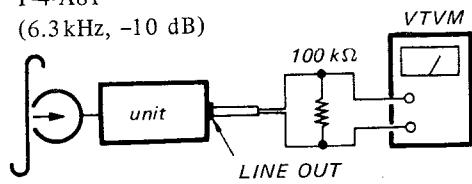
Settings:

LIMITER switch: OFF
 TAPE SELECT switch: NORMAL
 DOLBY NR switch: OFF

Procedure:

1. Mode: Playback

P-4-A81
 (6.3 kHz, -10 dB)

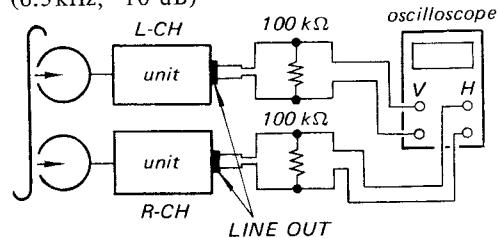


2.

Adjust	VTVM reading	Remarks
azimuth adjusting screw	highest peak	If the azimuth angles of L-CH and R-CH are not the same, set the screw midway between two screw positions.

3. Mode: Playback

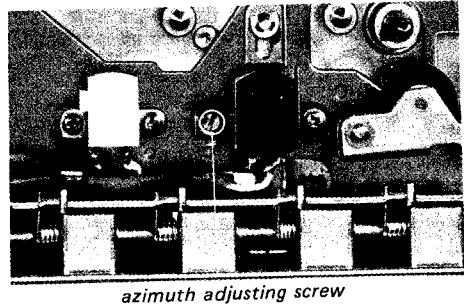
P-4-A81
 (6.3 kHz, -10 dB)



- 4.

Adjust	On the oscilloscope
azimuth adjusting screw	in phase

Adjustment Location:



3. Playback Level Adjustment

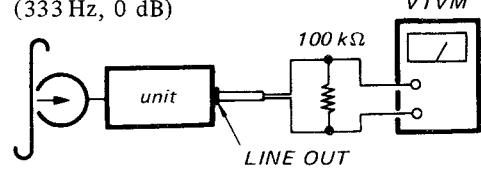
Settings:

LIMITER switch: OFF
 TAPE SELECT switch: NORMAL
 DOLBY NR switch: OFF

Procedure:

1. Mode: Playback

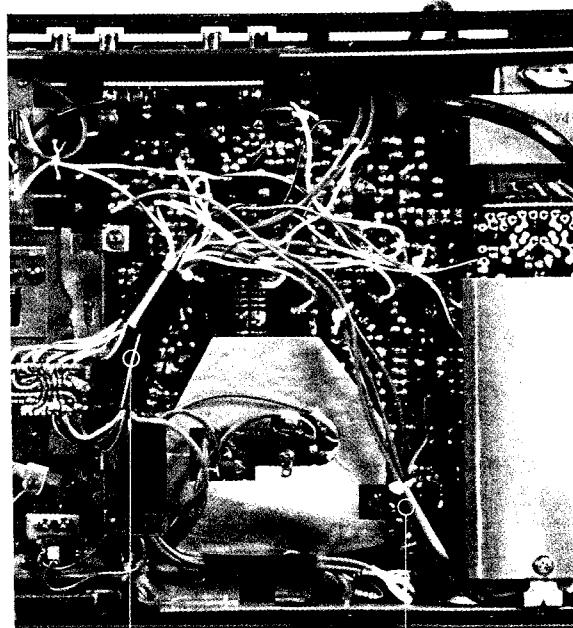
P-4-L81
 (333 Hz, 0 dB)



- 2.

Adjust	VTVM reading	Remarks
R115	0 dB	1. Allowance: within ± 0.5 dB
R215	(0.775 V)	2. Level difference between the L-CH and R-CH should be within 1 dB.

Adjustment Location:



4. Playback Equalizer Adjustment

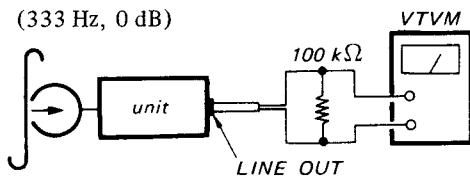
Settings:

LIMITER switch: OFF
 TAPE SELECT switch: NORMAL
 DOLBY NR switch: OFF

Procedure:

1. Mode: Playback

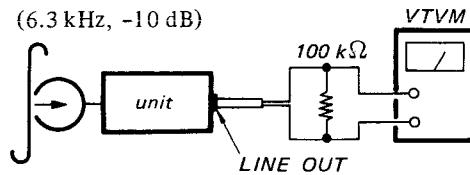
P-4-L81
 (333 Hz, 0 dB)



Memorize the VTVM reading.

2. Mode: Playback

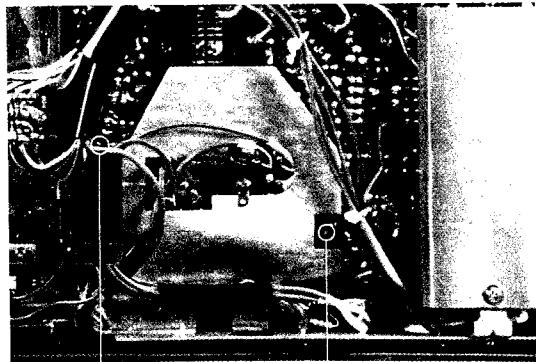
P-4-A81
 (6.3 kHz, -10 dB)



Adjust	VTVM reading	Remarks
R114 (L-CH)	Level in Step 2 are lower by 10 dB than level in Step 1.	Allowance: within ± 1 dB
R214 (R-CH)		

Note: When adjustable resistors R114 and R214 are much turned, perform playback level adjustment on Page 19.

Adjustment Location:



R214
(R-CH)

R114
(L-CH)

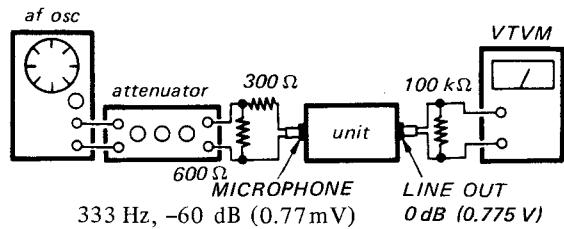
5. LEVEL Meter Calibration

Settings:

LIMITER switch: OFF
 TAPE SELECT switch: NORMAL
 DOLBY NR switch: OFF
 REC VOLUME control: For 0 dB (0.775 V)
 LINE OUT level with
 333 Hz, -60 dB (0.77 mV)
 MICROPHONE signal
 in record mode.

Procedure:

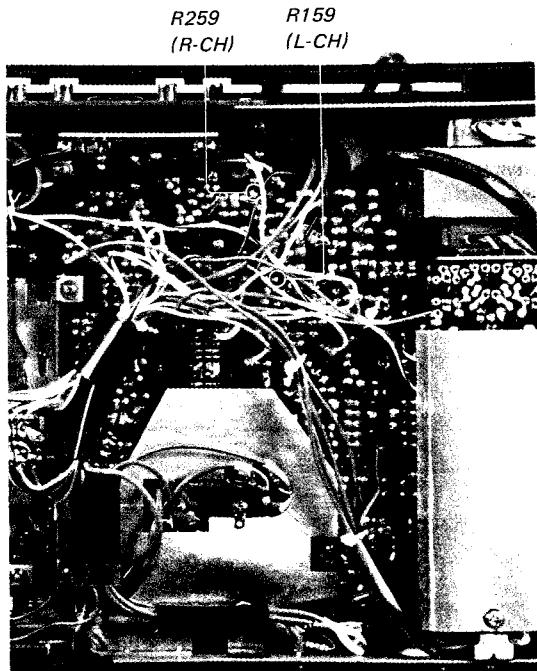
1. Mode: Record



- 2.

Adjust	LEVEL meter reading
R159 (L-CH)	-20
R259 (R-CH)	0
	+3

Adjustment Location:



R259
(R-CH)

R159
(L-CH)

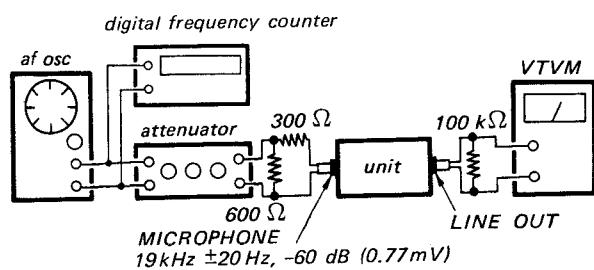
6. 19 kHz Filter Adjustment

Settings:

LIMITER switch: OFF
 TAPE SELECT switch: NORMAL
 DOLBY NR switch: OFF
 REC VOLUME control: For 0 dB (0.775 V)
 LINE OUT level with
 333 Hz, -60 dB (0.77 mV)
 MICROPHONE signal
 in record mode.

Procedure:

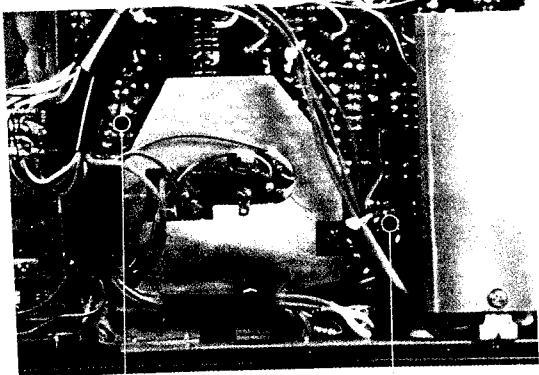
1. Mode: Record



Note: 19 kHz pilot signal of stereo signal generator may be used for input signal.

Adjust	VTVM reading	Remarks
L102 (L-CH)	minimum (less than -28 dB, 31 mV)	Frequency Allowance: within ±20 Hz.
L202 (R-CH)		

Adjustment Location:



L202
(R-CH)

L102
(L-CH)

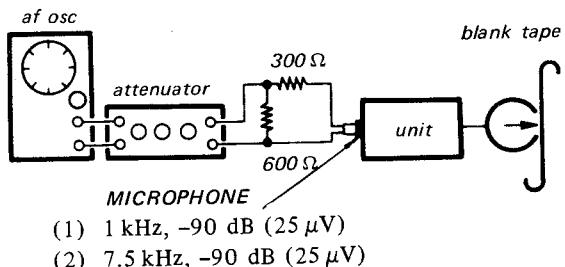
7. Record Bias Adjustment

Settings:

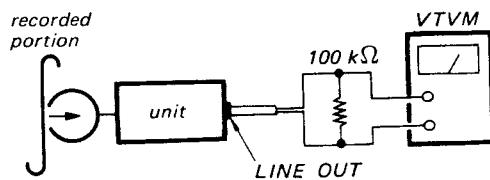
LIMITER switch: OFF
 TAPE SELECT switch: NORMAL
 DOLBY NR switch: OFF
 REC VOLUME control: For 0 dB (0.775 V)
 LINE OUT level with
 333 Hz, -60 dB (0.77 mV)
 MICROPHONE signal
 in record mode.

Procedure:

1. Mode: Record



2. Mode: Playback



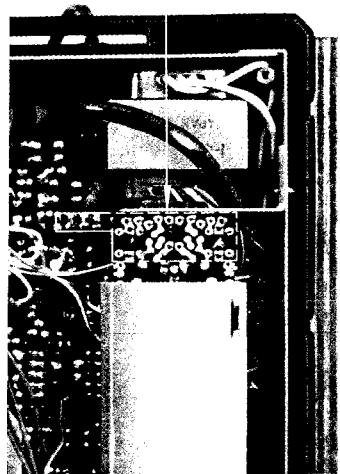
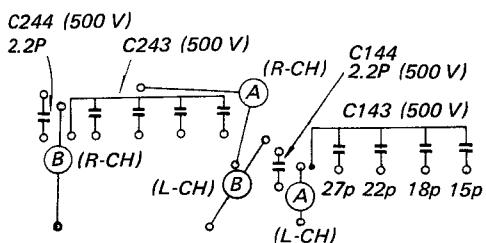
Adjust	VTVM reading
C143 (L-CH)	1 kHz level = 7.5 kHz level
C243 (R-CH)	Allowance: within ±0.5 dB
C144 (L-CH)	
C244 (R-CH)	

Level	Capacitance Value
7.5 kHz > 1 kHz	increase
7.5 kHz < 1 kHz	decrease

Adjust by soldering and repeat steps 1 and 2.

— Continued on next page —

Adjustment Location:



If the specified results are not obtained, connect additional capacitor:

Level	Adjust
7.5 kHz > 1 kHz	Connect capacitor 56pF at (A) position and repeat Steps 1 to 2.
7.5 kHz < 1 kHz	Connect capacitor 56pF at (B) position and repeat Steps 1 to 2.

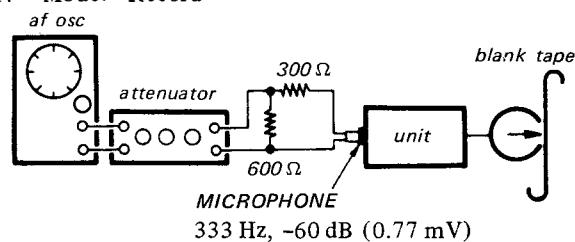
8. Record Level Adjustment

Settings:

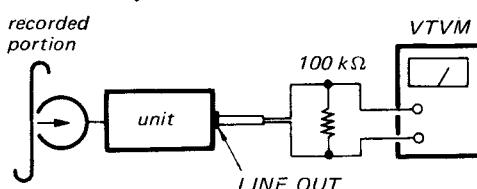
LIMITER switch: OFF
 TAPE SELECT switch: NORMAL
 DOLBY NR switch: OFF
 REC VOLUME control: For 0 dB (0.775 V)
 LINE OUT level with 333 Hz, -60 dB (0.77 mV)
 MICROPHONE signal in record mode.

Procedure:

1. Mode: Record



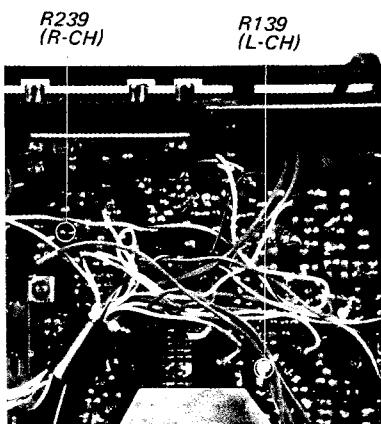
2. Mode: Playback



Adjust	VTVM reading	Remarks
R139 (L-CH)	0 dB (0.775 V)	Allowance: within ± 0.5 dB
R239 (R-CH)		

Adjust R139 and R239 and repeat steps 1 and 2.

Adjustment Location:



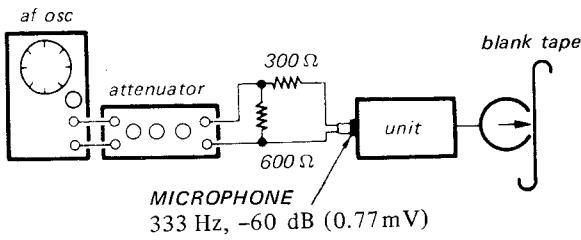
9. Overall Signal-to-Noise Ratio Measurement

Settings:

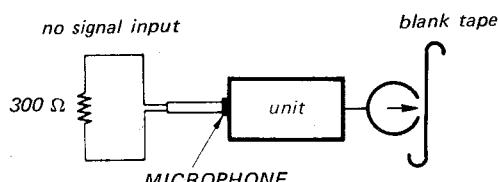
LIMITER switch: OFF
 TAPE SELECT switch: NORMAL
 DOLBY NR switch: OFF
 REC VOLUME control: for 0 dB (0.775 V)
 LINE OUT level with 333 Hz, -60 dB (0.77 mV)
 MICROPHONE signal in record mode.

Procedure:

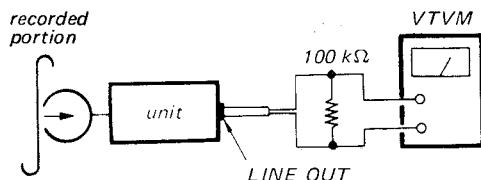
1. Mode: Record



2. Mode: Record



3. Mode: Playback



Playback	VTVM reading
333 Hz	
no signal	level difference: greater than 44 dB

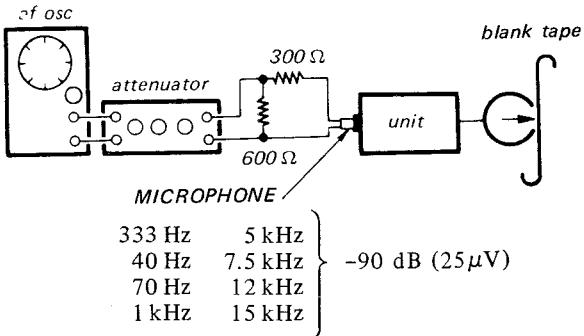
10. Overall Frequency Response Measurement

Settings:

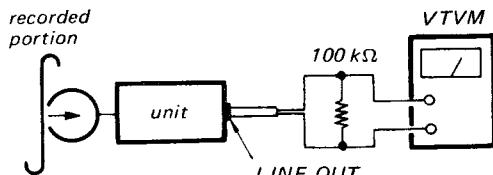
LIMITER switch: OFF
 TAPE SELECT switch: NORMAL
 REC VOLUME control: For 0 dB (0.775 V)
 LINE OUT level with 333 Hz, -60 dB (0.77 mV)
 MICROPHONE signal in record mode.

Procedure:

1. Mode: Record



2. Mode: Playback



Playback	Output level difference from 333 Hz level		
	DOLBY NR switch: ON	DOLBY NR switch: OFF	
		TAPE: C-60HF C-60CR	TAPE: C-60 CR TAPE SELECT switch: CrO2
333 Hz	0 dB	0 dB	0 dB
40 Hz	—	± 3 dB	± 3 dB
70 Hz	± 3 dB	± 3 dB	± 3 dB
1 kHz	± 4 dB	—	—
5 kHz	± 4 dB	± 3 dB	± 3 dB
7.5 kHz	± 4 dB	± 3 dB	± 3 dB
12 kHz	—	—	± 3 dB
15 kHz	—	± 3 dB	—

— : not specified

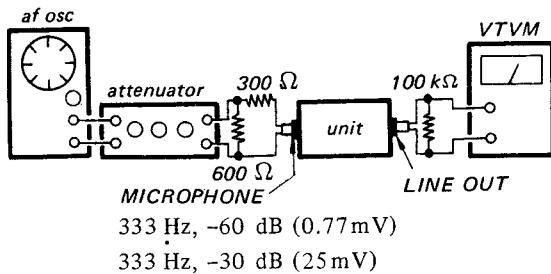
11. LIMITER Response Measurement

Settings:

LIMITER switch: ON
 TAPE SELECT switch: NORMAL
 REC VOLUME control: For 0 dB (0.775 V)
 LINE OUT level with
 333 Hz, -60 dB (0.77 mV)
 MICROPHONE signal
 in record mode.

Procedure:

1. Mode: Record



Input signal	VTVM reading
333 Hz, -60 dB (0.77 mV)	-0.5 dB (0.73 V) ± 1 dB
333 Hz, -30 dB (25 mV)	+4 dB (1.2 V) ± 1.5 dB

12. DOLBY System Signal-to-Noise Ratio Improvement Measurement

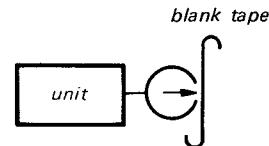
Settings:

LIMITER switch: OFF
 TAPE SELECT switch: NORMAL
 REC VOLUME control: MIN
 DOLBY NR switch: OFF

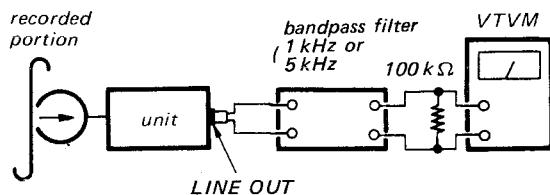
Procedure:

1. Mode: Record

no signal input



2. Mode: Playback



3. With DOLBY NR switch set to ON position, perform Steps 1 and 2.
4. Ensure that DOLBY system improves S/N ratio. S/N ratio should be improved.
 - 4 dB or more at 1 kHz
 - 8 dB or more at 5 kHz

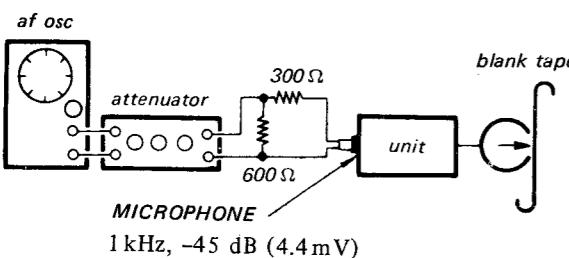
13. Erase Ratio Measurement

Settings:

LIMITER switch: OFF
 TAPE SELECT switch: CrO₂
 DOLBY NR switch: OFF
 REC VOLUME control: For 0 dB (0.775 V)
 LINE OUT level with 333 Hz, -60 dB (0.77 mV)
 MICROPHONE signal in record mode.
 blank tape: C-60 CR

Procedure:

1. Mode: Record

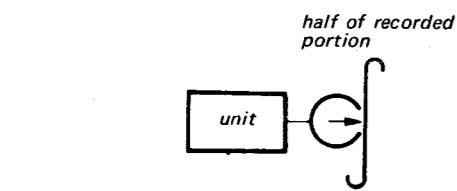


2. Rewind half of recorded portion.

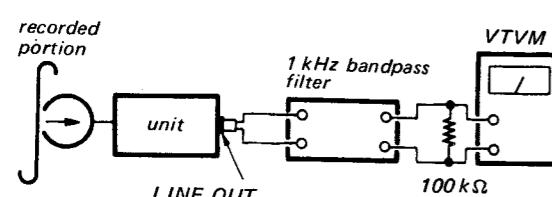
3. Set the REC VOLUME control to MIN position.

4. Mode: Record

no signal input (erase)



5. Mode: Playback



Playback	VTVM reading
1 kHz	level difference: greater than 60 dB
erased portion	

14. Cross-talk Measurement (between channels)

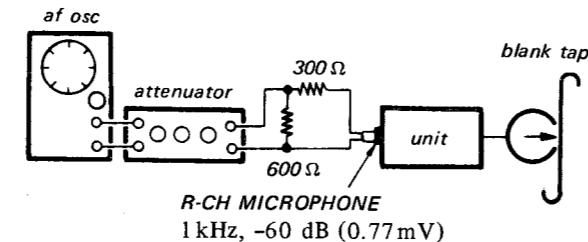
Settings:

LIMITER switch: OFF
 TAPE SELECT switch: NORMAL
 DOLBY NR switch: OFF
 R-CH REC VOLUME control: For 0 dB (0.775 V)
 LINE OUT level with 333 Hz, -60 dB (0.77 mV)
 MICROPHONE signal in record mode.
 blank tape: C-60 CR

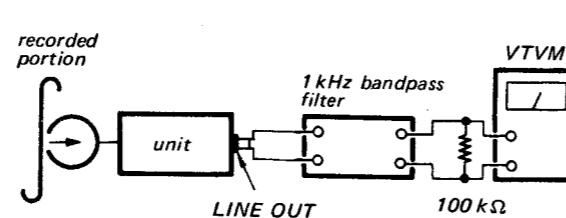
Procedure:

1. Set L-CH REC VOLUME control to the same as R-CH REC VOLUME control position.
2. Terminate L-CH MIC jack with 300 Ω resistor.

3. Mode: Record



4. Mode: Playback



Play back	VTVM reading
R-CH (1 kHz)	level difference: greater than 25 dB
L-CH (no signal)	

15. Cross-talk Measurement (between tracks)

Settings:

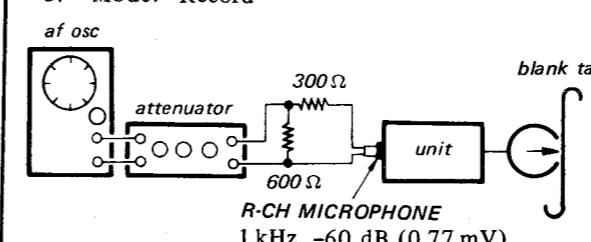
LIMITER switch: OFF
 TAPE SELECT switch: NORMAL
 DOLBY NR switch: OFF
 R-CH REC VOLUME control: For 0 dB (0.775 V)
 LINE OUT level with 333 Hz, -60 dB (0.77 mV)
 MICROPHONE signal in record mode.

Procedure:

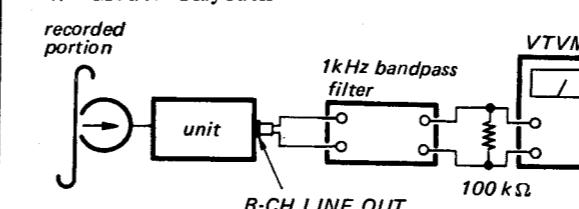
1. Set L-CH REC VOLUME control to the same as R-CH REC VOLUME position.

2. Terminate L-CH MIC jack with 300 Ω resistor.

3. Mode: Record

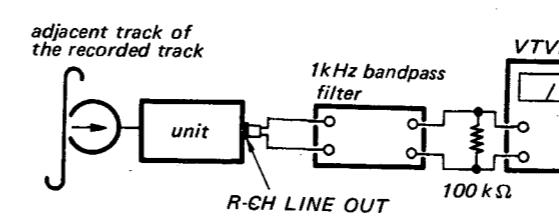


4. Mode: Playback



5. Turn the cassette over.

6. Mode: Playback



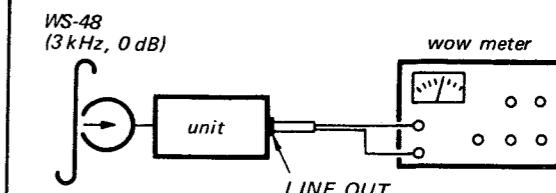
Playback	VTVM reading
1 kHz	level difference: greater than 60 dB
adjacent track of the recorded track	

16. Wow and Flutter Measurement

Settings:

LIMITER switch: OFF
 TAPE SELECT switch: NORMAL
 DOLBY NR switch: OFF

Procedure:



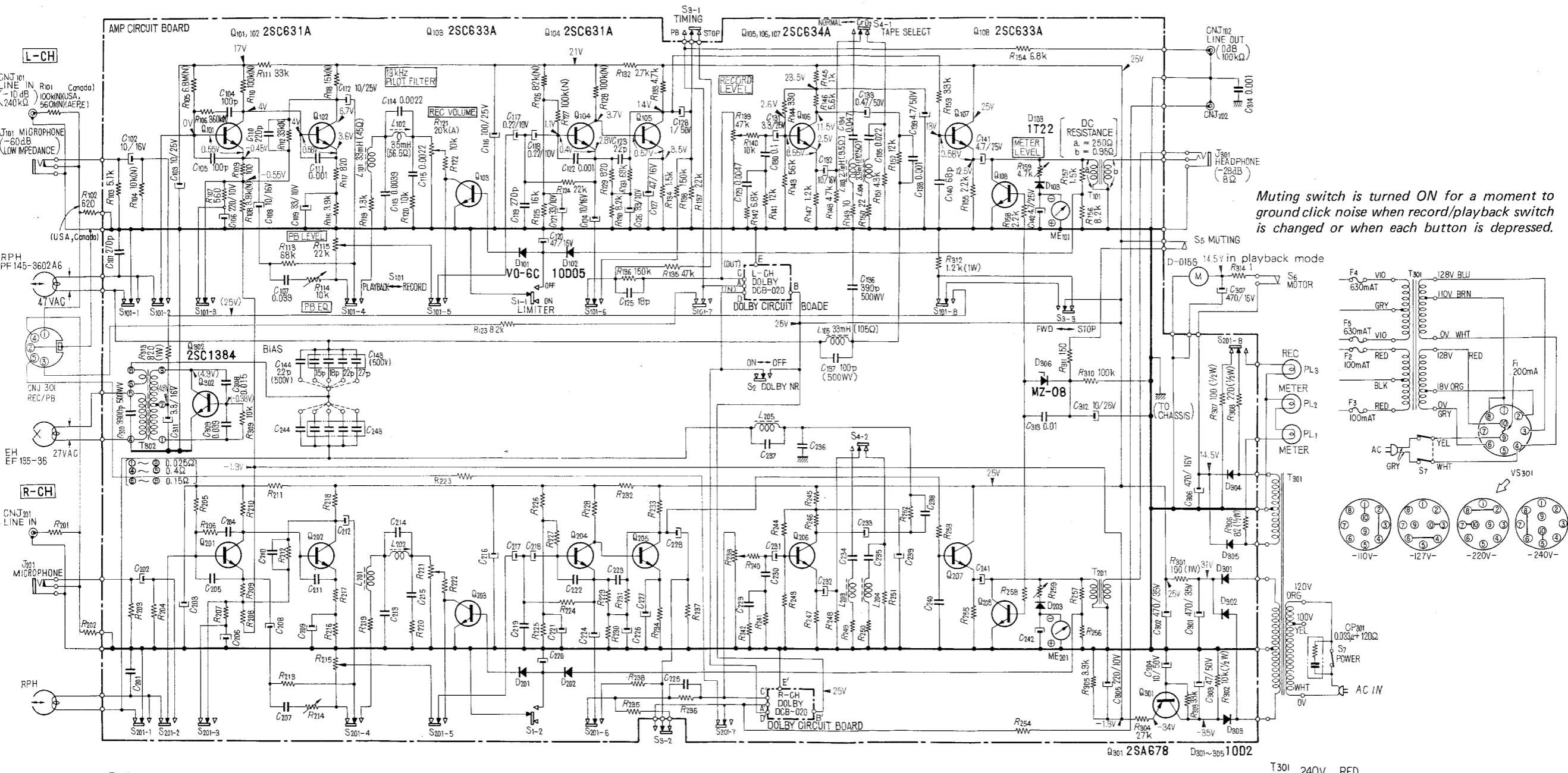
Specification: 0.25 % (RMS) weighted

Note: Measure wow and flutter for beginning and end portion of tape (WS-48).

SECTION 4 DIAGRAMS

4-1. SCHEMATIC DIAGRAM

Amp Circuit



Red Line Circuit: AEP, E, AUS

Note:

- All resistors and capacitors are in Ω and μF unless otherwise specified.
- Letter in () suffixed to variable resistor value indicates characteristics.
- --- : chassis ground
- Components for R-CH have the same values as for L-CH.

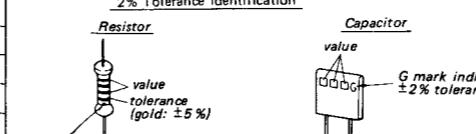
- (N) : Low noise resistor
- Voltage values shown are measured with a voltmeter ($20\text{k}\Omega/\text{V}$). Variations may be noted due to normal production tolerances.
- no mark : stop mode
- () : record mode
- AC voltage values across heads are measured with a VTVM in record mode.

• Switch mode:

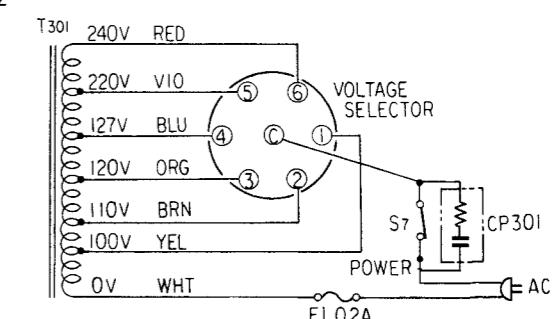
Ref. No.	Switch	Mode
S101, 201	record/playback	playback
S1	LIMITER	ON
S2	DOLBY NR	ON
S3	timing	STOP
S4	TAPE SELECT	CrO ₂
S5	muting	OFF
S6	motor	OFF
S7	POWER	ON

- When replacing resistors and capacitors needing $\pm 2\%$ tolerance, use only those with red line (or dot) or G mark, as DOLBY system requires precise circuit operation.

2% Tolerance Identification



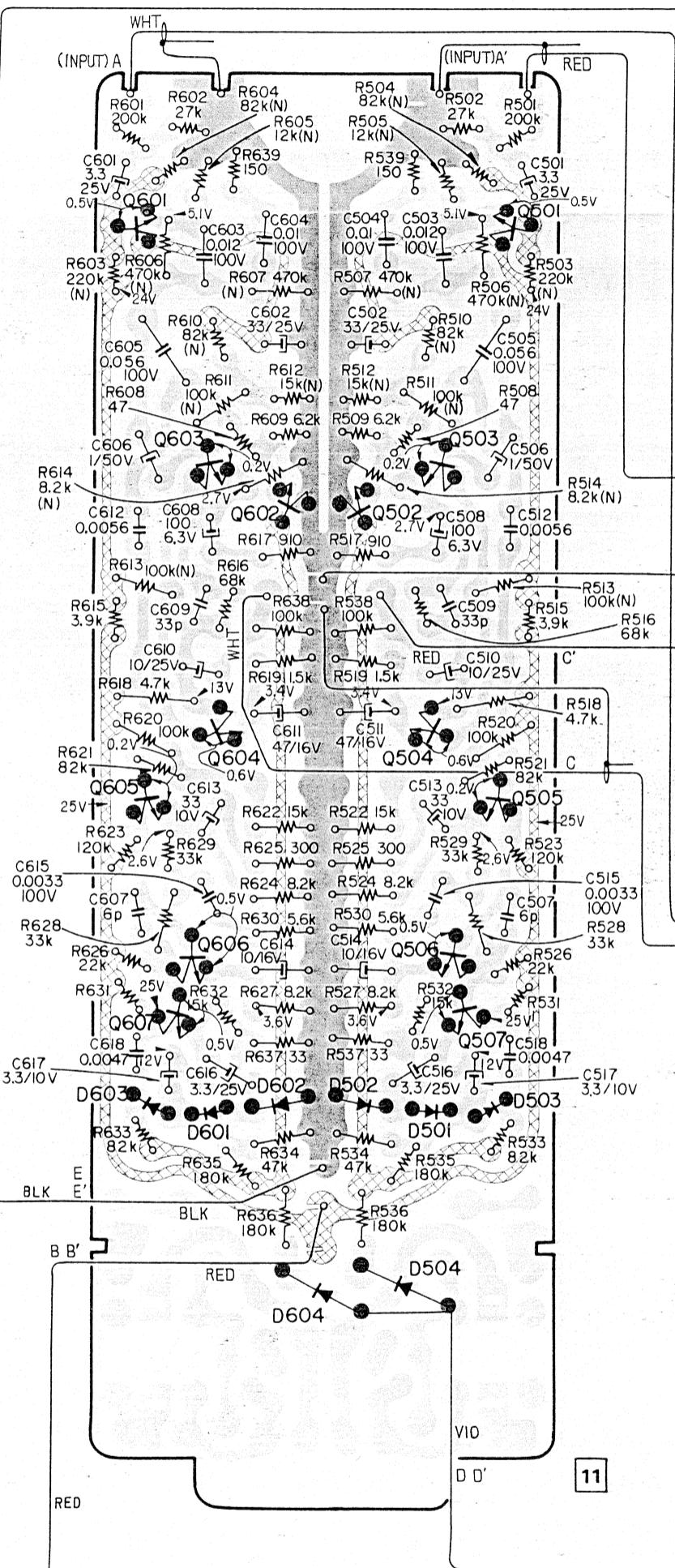
Red line (or dot) indicates $\pm 2\%$ tolerance selected from resistors of $\pm 5\%$ tolerance



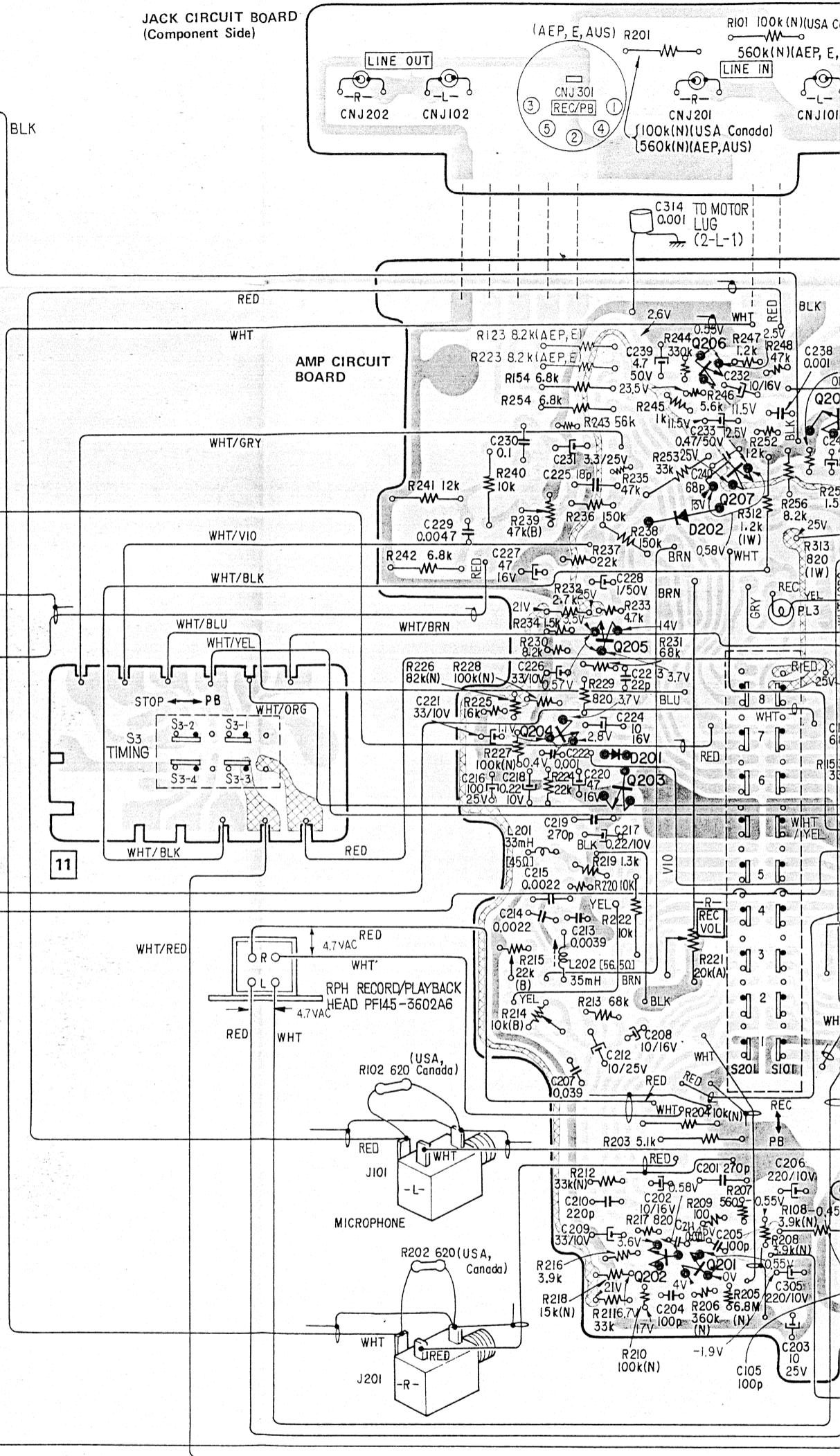
4-2. MOUNTING DIAGRAMS

— Conductor Side —

DOLBY CIRCUIT BOARD
DCB-020



JACK CIRCUIT BOARD
(Component Side)

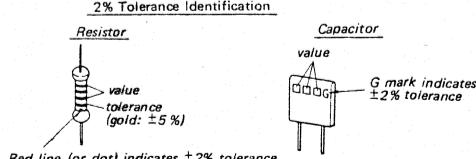


sitors and capacitors are in Ω and μF otherwise specified.
 in () suffixed to variable resistor indicates characteristics.
 : chassis ground
 nponents for R-CH have the same values as CH.

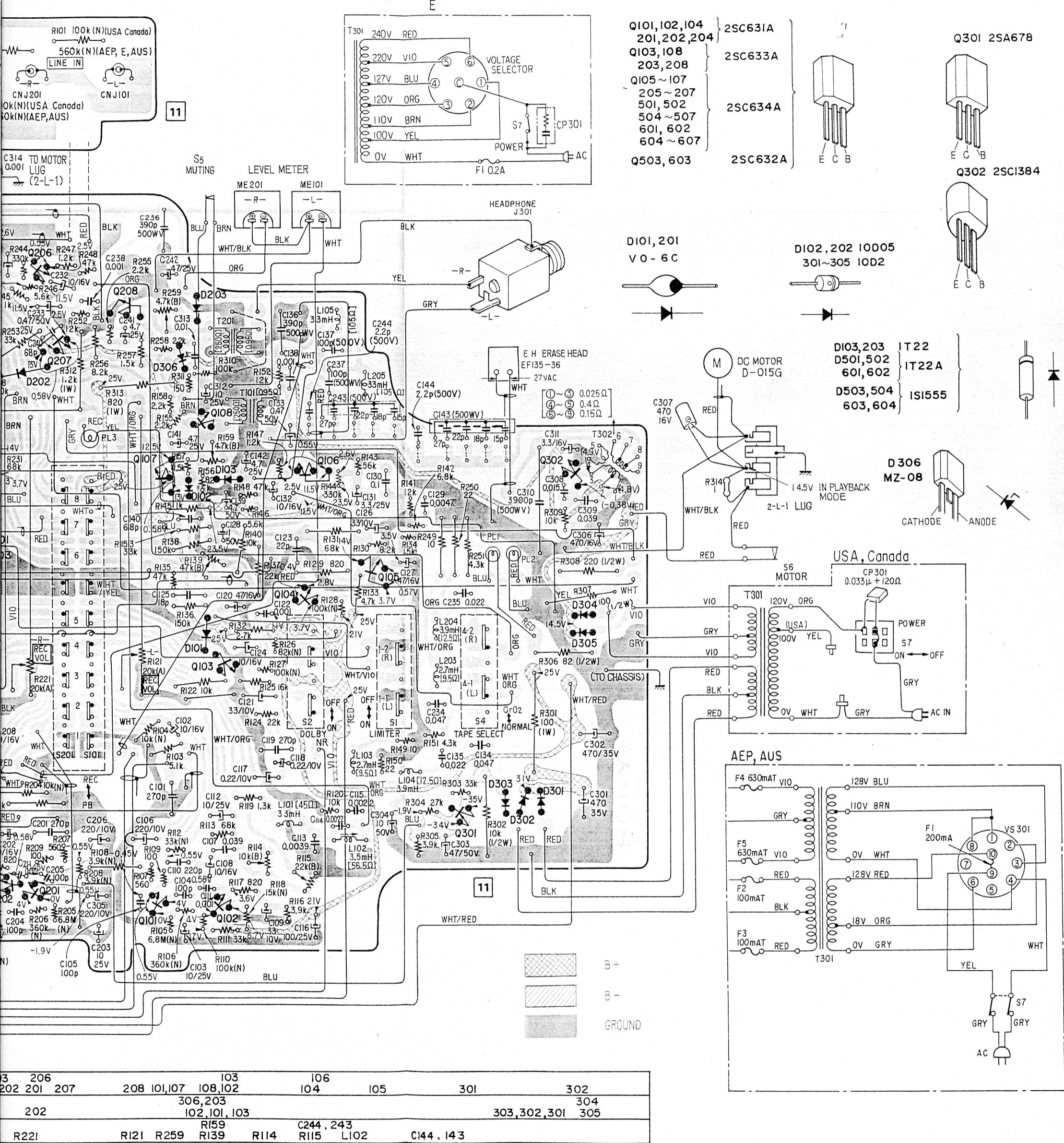
- (N) : Low noise resistor
- Voltage values shown are measured with a voltmeter (20k Ω /V). Variations may be noted due to normal production tolerances.
 - no mark : stop mode
 - () : record mode
- AC voltage values across heads are measured with a VTVM in record mode.

Ref. No.	Switch	Mode
S101, 201	record/playback	playback
S1	LIMITER	ON
S2	DOLBY NR	ON
S3	timing	STOP
S4	TAPE SELECT	CrO ₂
S5	muting	OFF
S6	motor	OFF
S7	POWER	ON

- When replacing resistors and capacitors needing $\pm 2\%$ tolerance, use only those with red line (or dot) or G mark, as DOLBY system requires precise circuit operation.

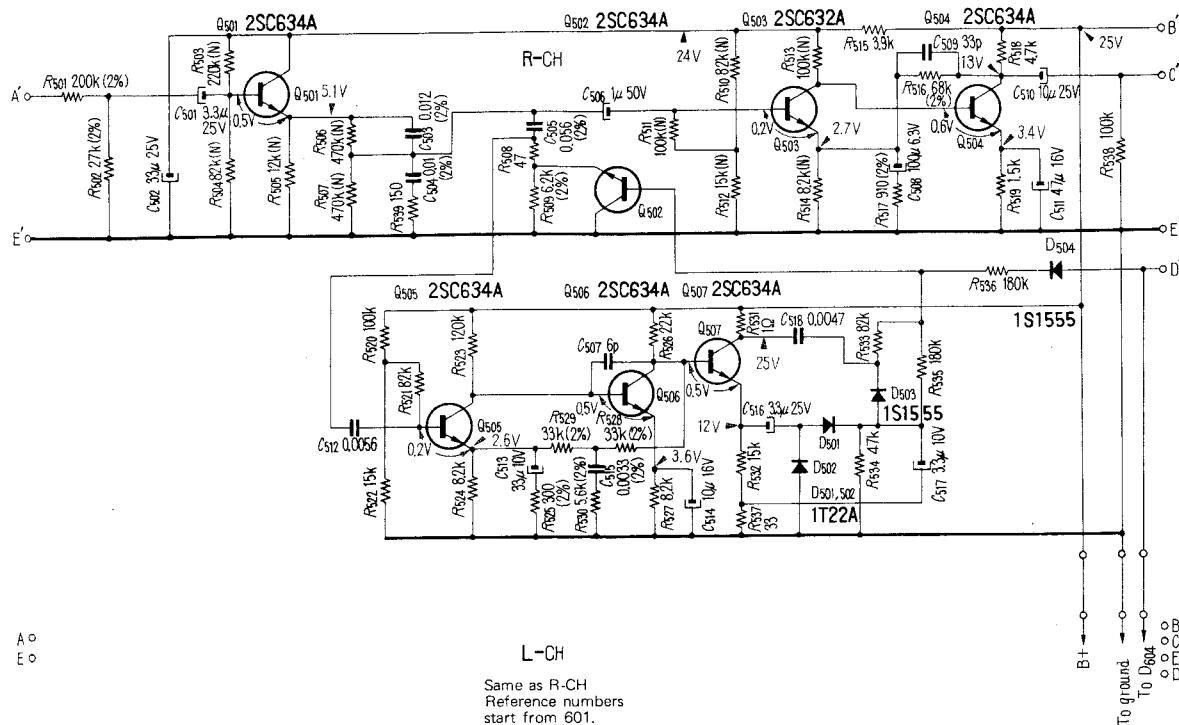


Q	204	205	203	206	
			202	201	207
D			201	202	
ADI	R239	L202			



4-3. SCHEMATIC DIAGRAM

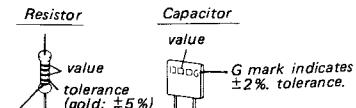
DOLBY Circuit



Note:

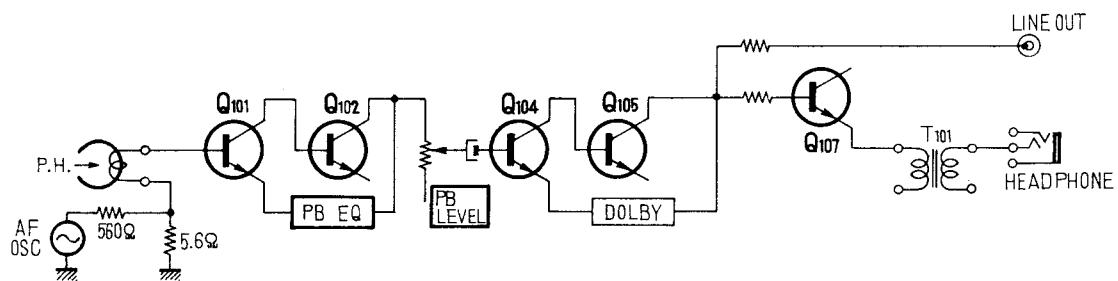
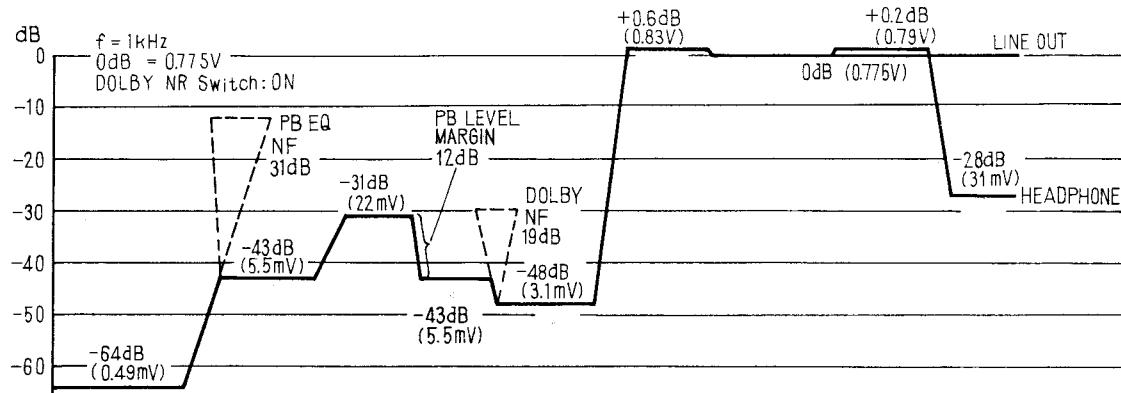
1. All resistors and capacitors are rated in Ω and μF unless otherwise indicated.
2. The letter (N) which is suffixed to rating values shows a low noise resistor.
3. Voltage values shown are measured with a voltmeter ($20k\Omega/V$) in playback mode. Variations may be noted because of normal production tolerances.
4. Components for R-CH are the same value as for L-CH.
5. When replacing resistors and capacitors needing $\pm 2\%$ tolerance, use only those with red line (or dot) or G mark, as DOLBY system requires precise circuit operation.

2% Tolerance Identification

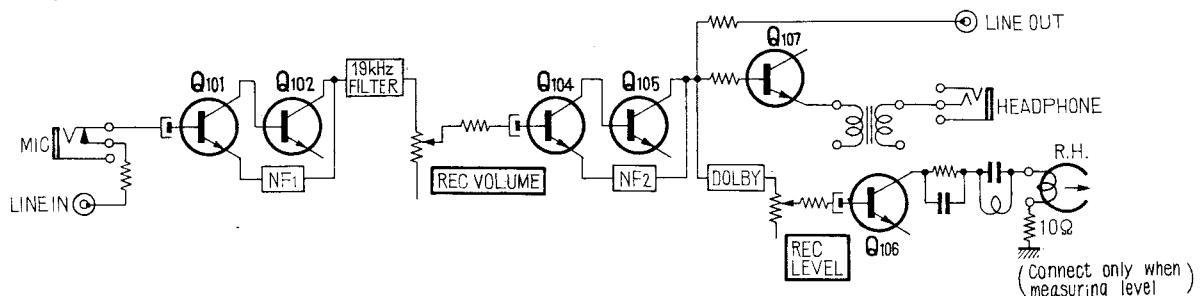
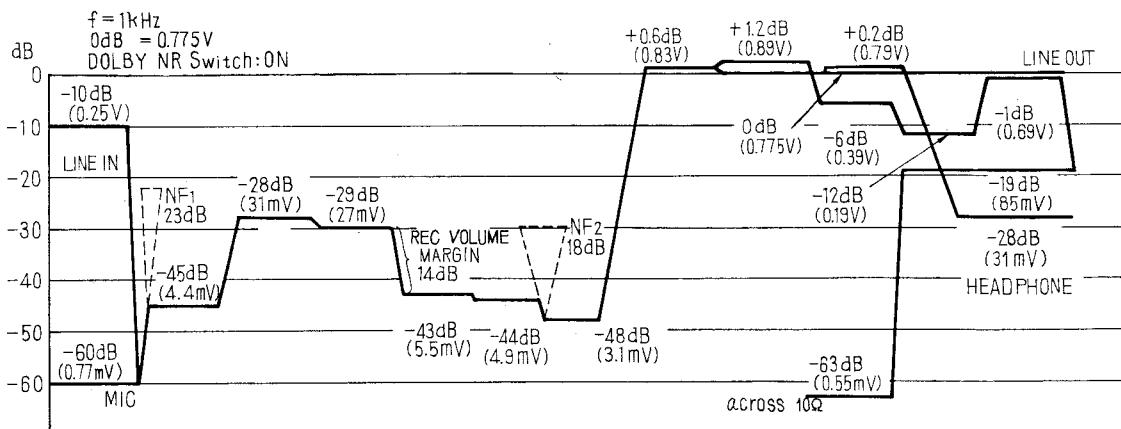


4.4. LEVEL DIAGRAMS

Playback

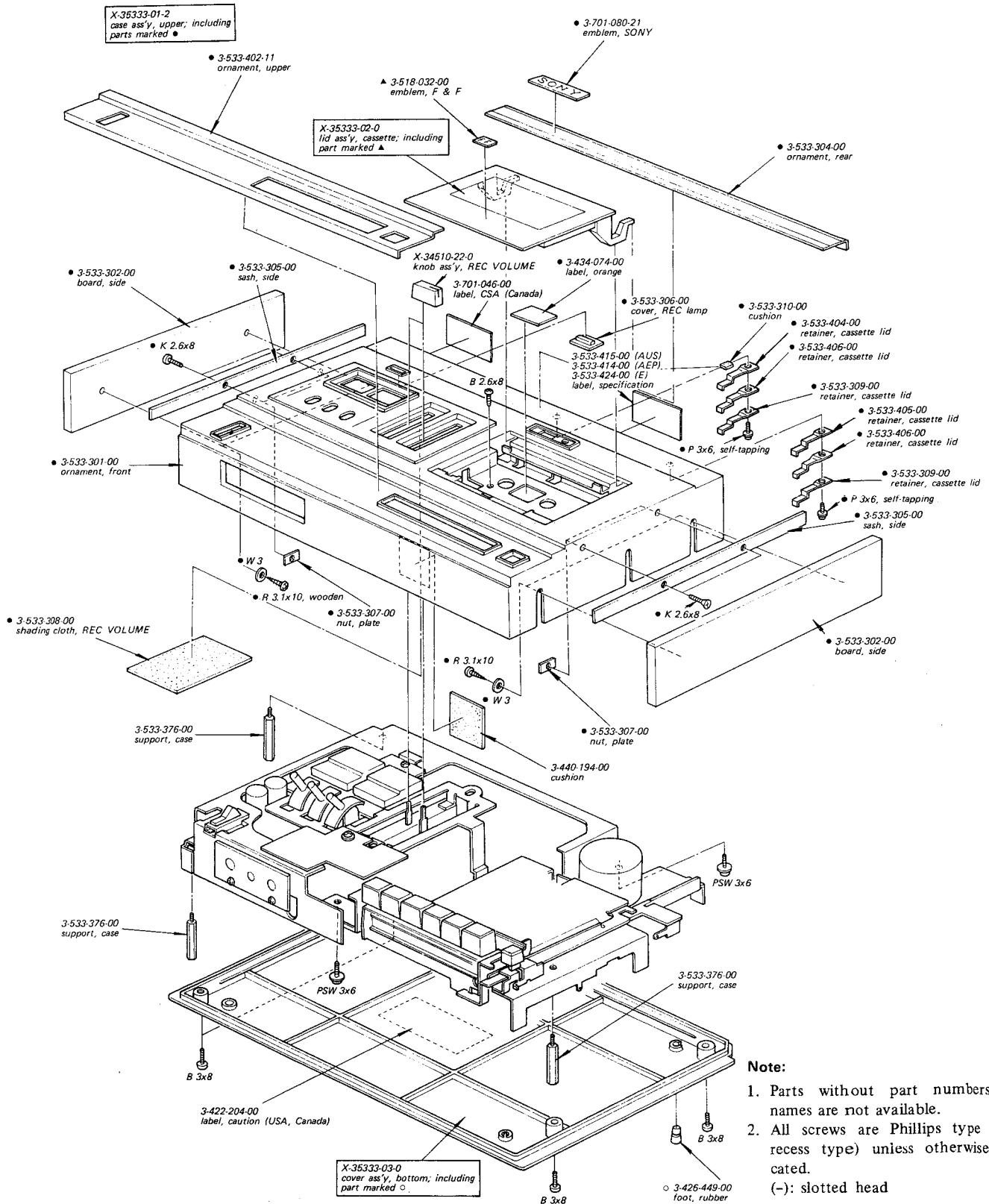


Record

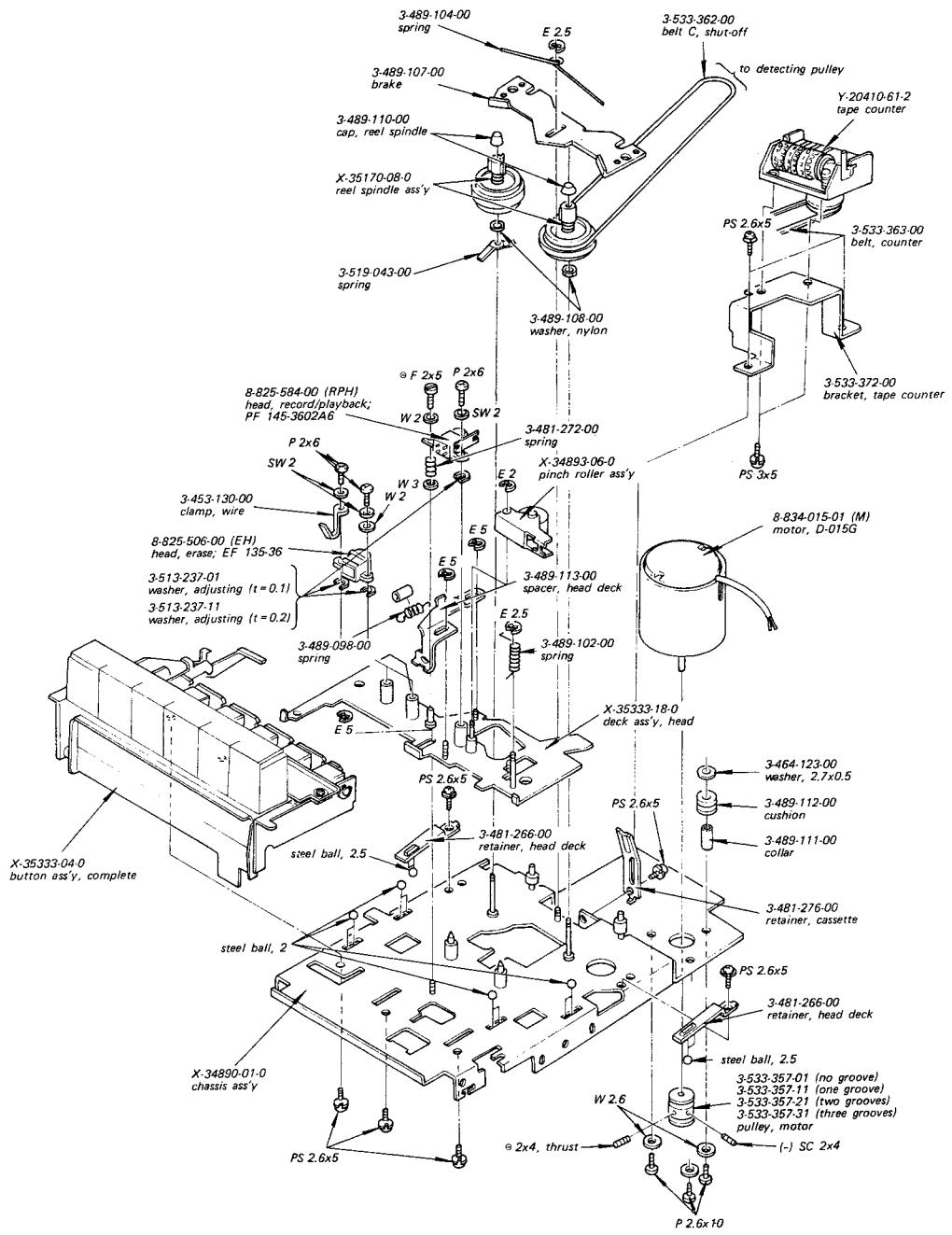


SECTION 5 EXPLODED VIEWS AND PACKING

5-1. EXPLODED VIEW (1)



5-2. EXPLODED VIEW (2)

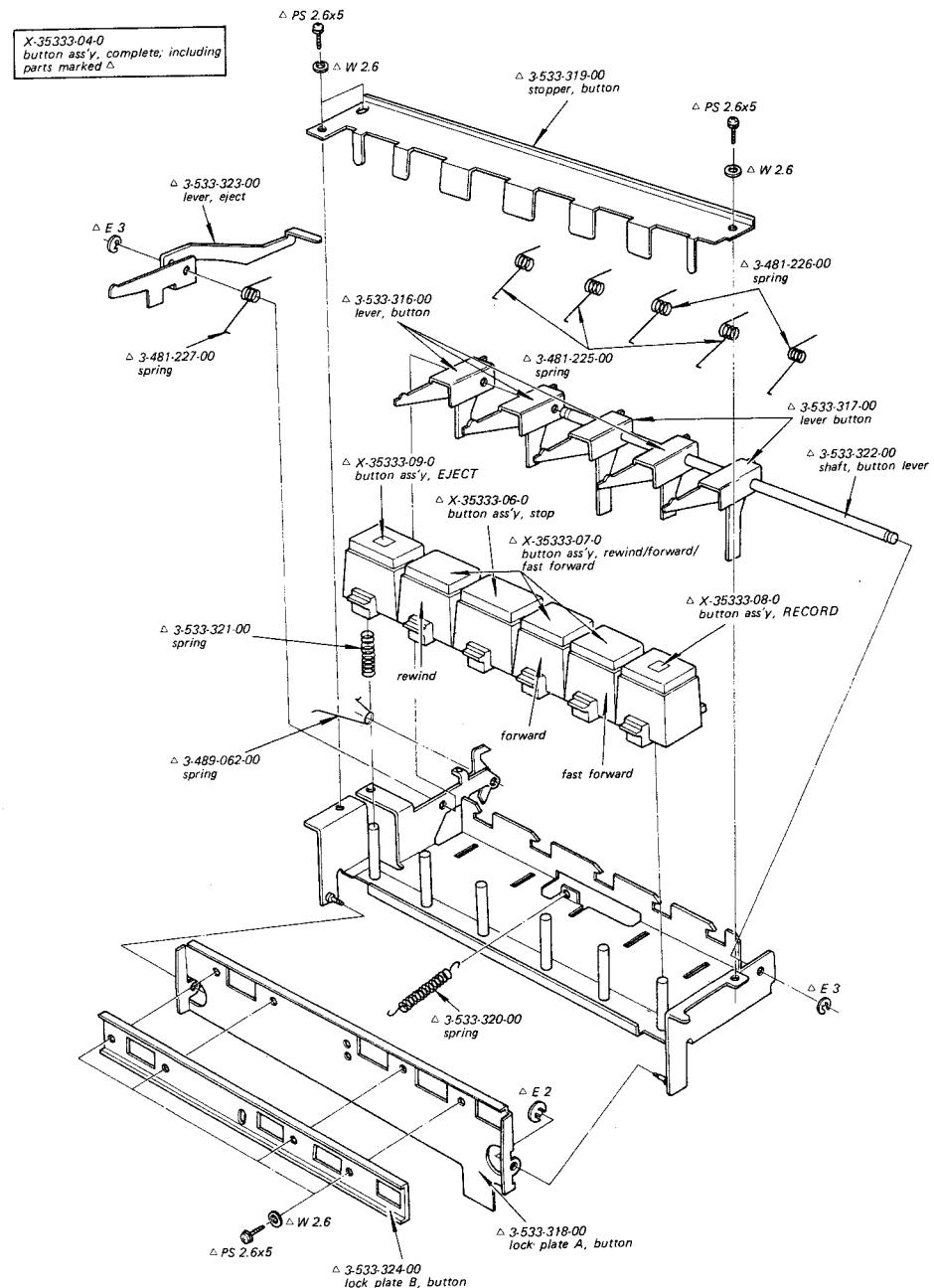


Note:

1. Parts without part numbers and names are not available.
2. All screws are Phillips type (cross recess type) unless otherwise indicated.

(-): slotted head

5-3. EXPLODED VIEW (3)

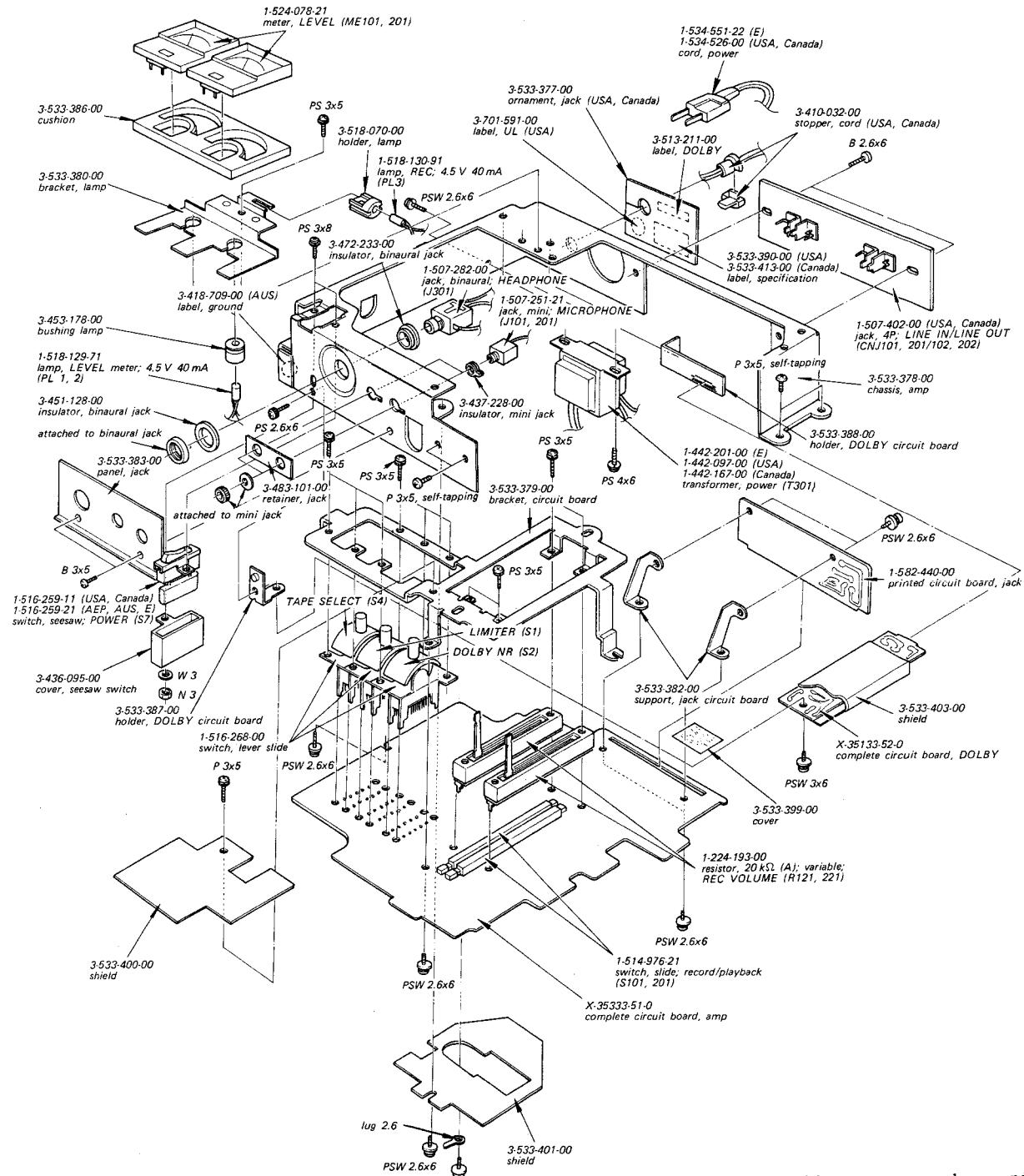


Note:

1. Parts without part numbers and names are not available.
2. All screws are Phillips type (cross recess type) unless otherwise indicated.

(-): slotted head

5-4. EXPLODED VIEW (4)

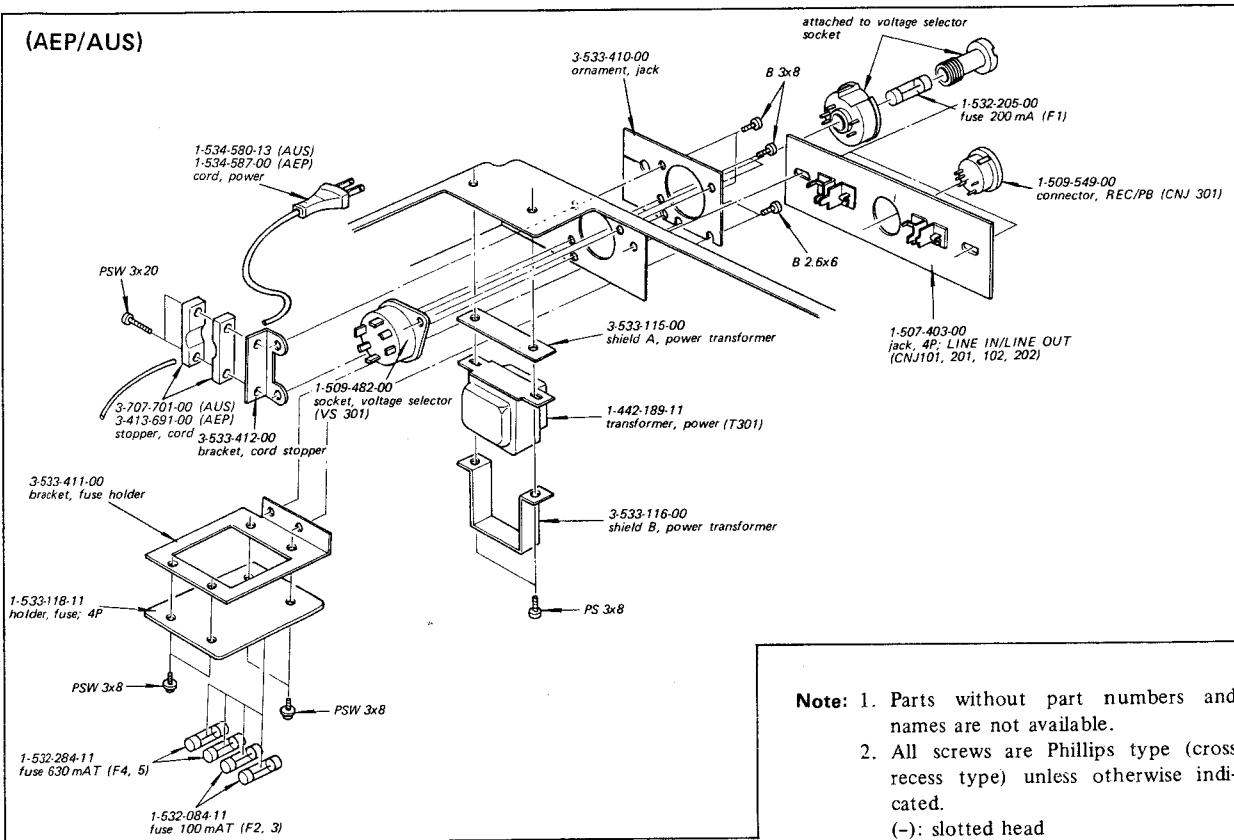


Note:

1. Parts without part numbers and names are not available.
2. All screws are Phillips type (cross recess type) unless otherwise indicated.

(-): slotted head

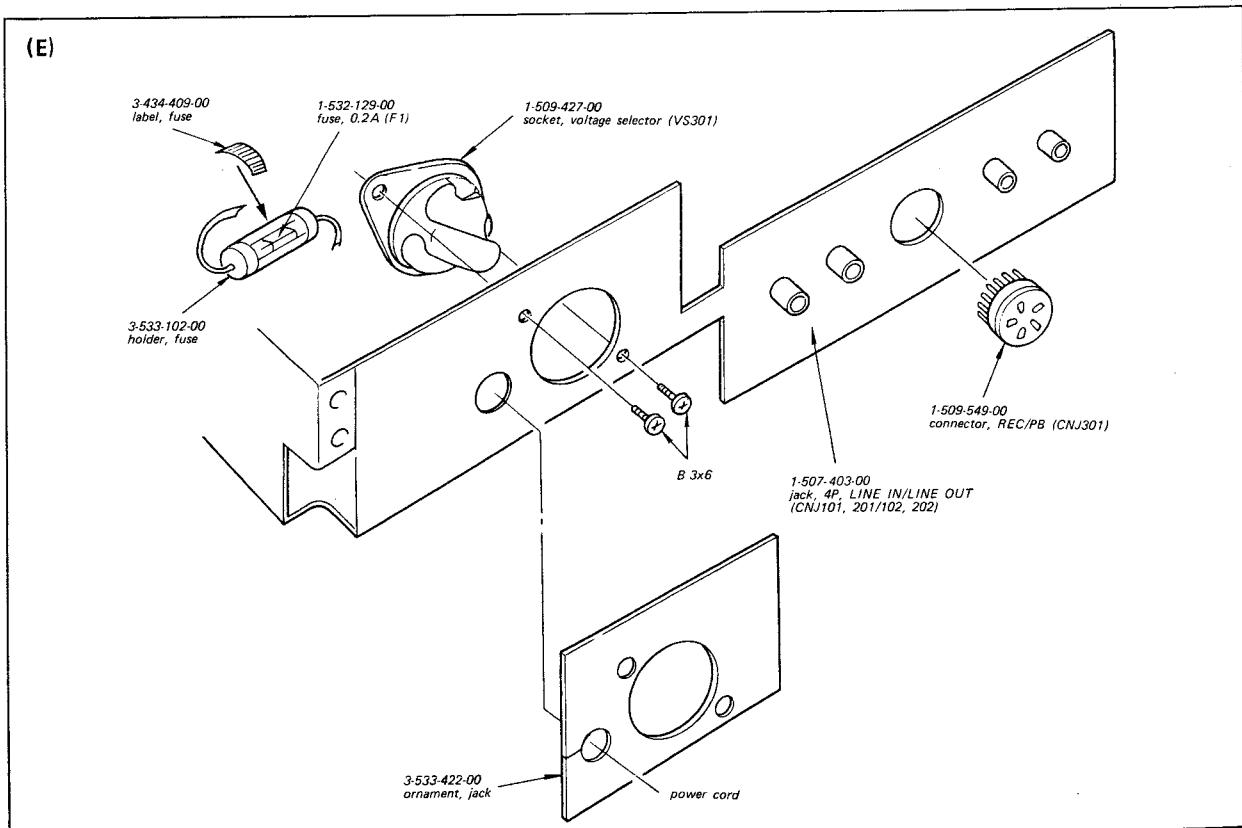
5-5. EXPLODED VIEW (5)



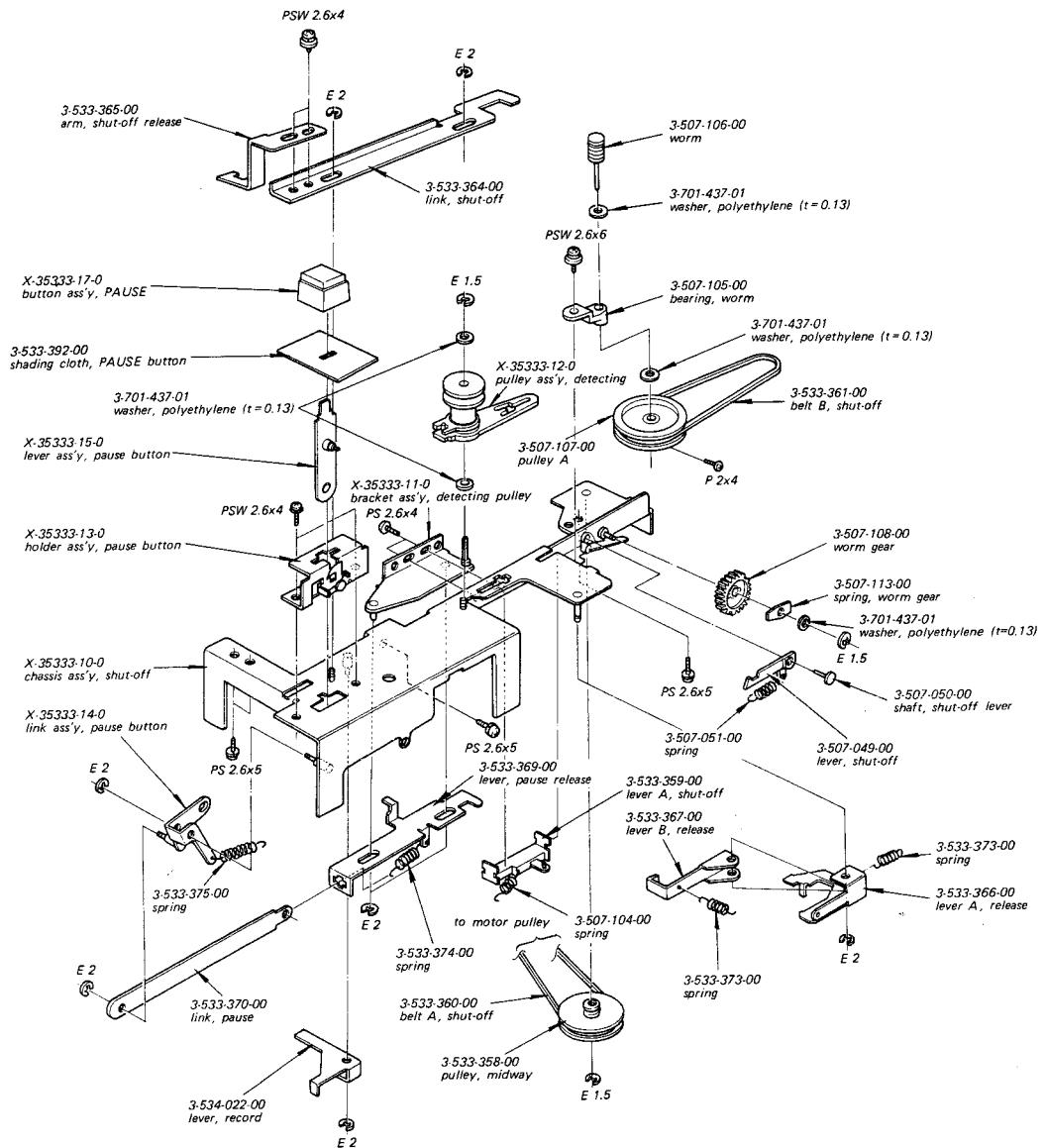
Note:

1. Parts without part numbers and names are not available.
2. All screws are Phillips type (cross recess type) unless otherwise indicated.

(-): slotted head



5-6. EXPLODED VIEW (6)

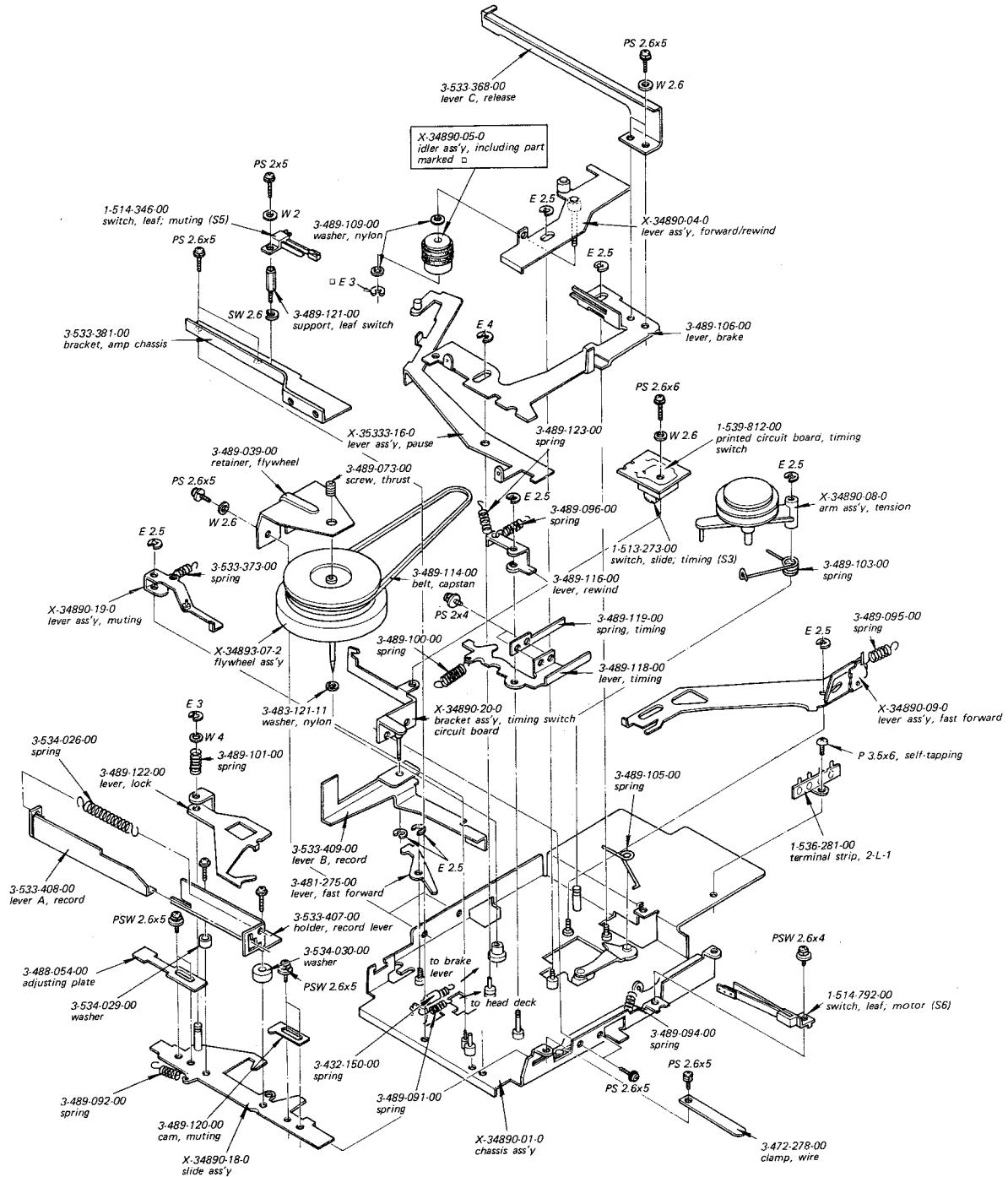


Note:

1. Parts without part numbers and names are not available.
2. All screws are Phillips type (cross recess type) unless otherwise indicated.

(-): slotted head

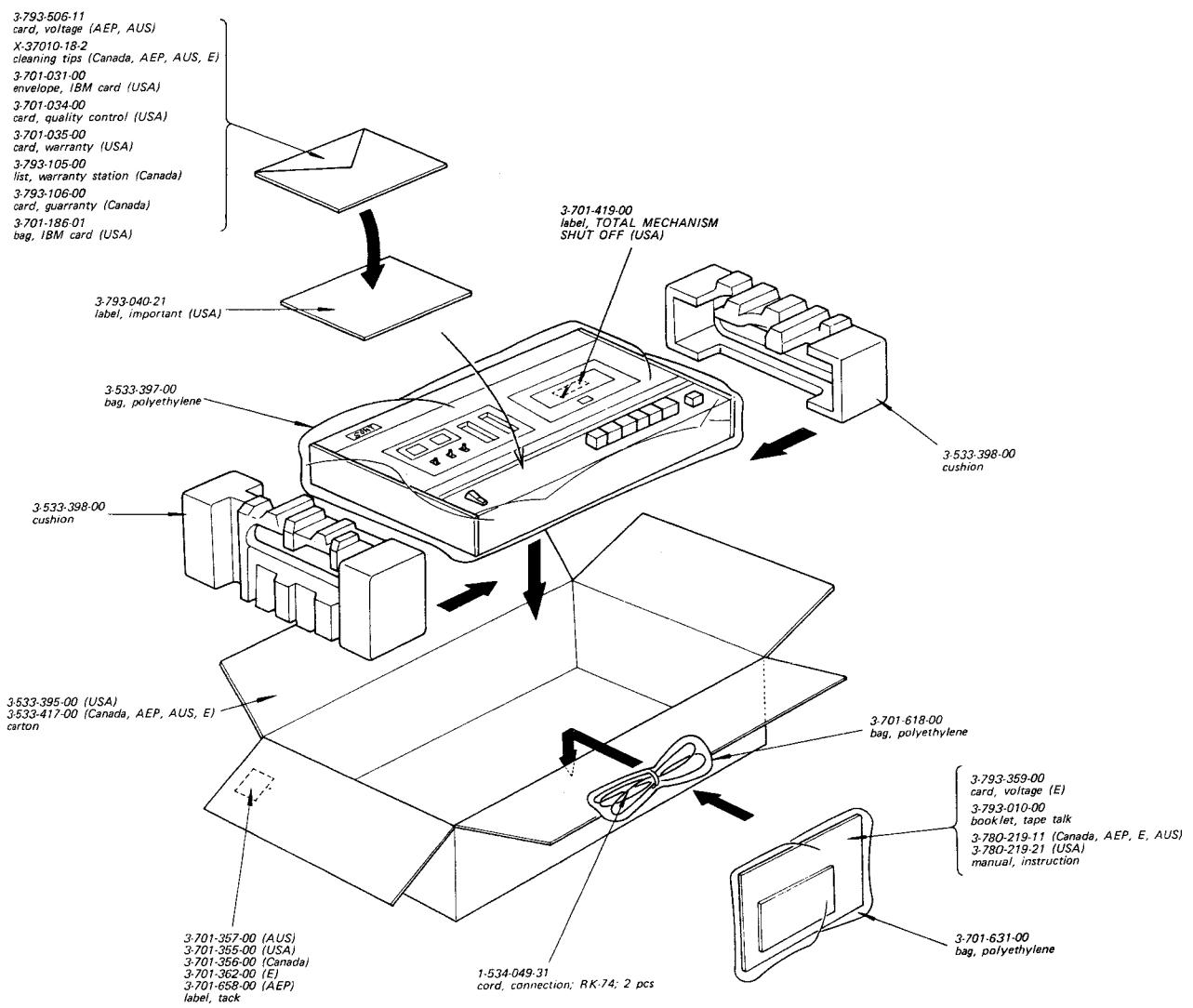
5-7. EXPLODED VIEW (7)



Note:

1. Parts without part numbers and names are not available.
2. All screws are Phillips type (cross recess type) unless otherwise indicated.
(-): slotted head

5-8. PACKING



Note: Parts without part numbers and names are not available.

SECTION 6

ELECTRICAL PARTS LIST

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>		
COMPLETE CIRCUIT BOARDS							
	X-35133-52-0	DOLBY	L101, 201	1-407-561-00	microinductor, 33 mH		
	X-35333-51-0	amp	L102, 202	1-407-658-00	trap, 35 mH		
			L103, 203	1-407-497-00	microinductor, 2.7 mH		
			L104, 204	1-407-499-00	microinductor, 3.9 mH		
			L105, 205	1-407-212-00	microinductor, 33 mH		
PRINTED CIRCUIT BOARDS							
1-539-812-00	timing switch		COILS				
1-582-440-00	jack		TRANSFORMERS				
SEMICONDUCTORS							
Q101, 201	transistor	2SC631A	T101, 201	1-427-299-00	output		
Q102, 202	transistor	2SC631A		1-442-097-00	power (USA)		
Q103, 203	transistor	2SC633A		1-442-167-00	power (Canada)		
Q104, 204	transistor	2SC631A	T301	1-442-189-11	power (AEP, AUS)		
Q105, 205	transistor	2SC634A		1-442-201-00	power (E)		
Q106, 206	transistor	2SC634A	T302	1-433-132-14	bias osc		
Q107, 207	transistor	2SC634A	CAPACITORS				
Q108, 208	transistor	2SC633A	All capacitors are in μ F unless otherwise indicated. (p = $\mu\mu$, elect = electrolytic)				
Q301	transistor	2SA678	C101, 201	1-107-095-11	270 p	50 V	silvered mica
Q302	transistor	2SC1384	C102, 202	1-121-651-11	10	16 V	elect
Q501, 601	transistor	2SC634A	C103, 203	1-121-398-11	10	25 V	elect
Q502, 602	transistor	2SC634A	C104, 204	1-107-131-11	100 p	50 V	silvered mica
Q503, 603	transistor	2SC632A	C105, 205	1-107-131-11	100 p	50 V	silvered mica
Q504, 604	transistor	2SC634A	C106, 206	1-121-420-11	220	10 V	elect
Q505, 605	transistor	2SC634A	C107, 207	1-105-680-12	0.039	50 V	mylar
Q506, 606	transistor	2SC634A	C108, 208	1-121-651-11	10	16 V	elect
Q507, 607	transistor	2SC634A	C109, 209	1-121-402-11	33	10 V	elect
D101, 201	diode	VO-6C	C110, 210	1-107-139-11	220 p	50 V	silvered mica
D102, 202	diode	10D-05	C111, 211	1-105-821-12	0.001	50 V	mylar
D103, 203	diode	1T-22	C112, 212	1-121-398-11	10	25 V	elect
D301	diode	10D-2	C113, 213	1-105-668-12	0.0039	50 V	mylar
D302	diode	10D-2	C114, 214	1-105-665-12	0.0022	50 V	mylar
D303	diode	10D-2	C115, 215	1-105-665-12	0.0022	50 V	mylar
D304	diode	10D-2	C116, 216	1-121-416-11	100	25 V	elect
D305	diode	10D-2	C117, 217	1-127-020-11	0.22	10 V	solid aluminum
D306	diode	MZ-08	C118, 218	1-127-020-11	0.22	10 V	solid aluminum
DS01, 601	diode	1T-22	C119, 219	1-107-141-11	270 p	50 V	silvered mica
DS02, 602	diode	1T-22	C120, 220	1-121-409-11	47	16 V	elect
DS03, 603	diode	1S1555	C121, 221	1-121-402-11	33	10 V	elect
DS04, 604	diode	1S1555	C122, 222	1-105-821-12	0.001	50 V	mylar
			C123, 223	1-107-115-11	22 p	50 V	silvered mica
			C124, 224	1-121-651-11	10	16 V	elect
			C125, 225	1-107-113-11	18 p	50 V	silvered mica
			C126, 226	1-121-402-11	33	10 V	elect
			C127, 227	1-121-409-11	47	16 V	elect
			C128, 228	1-121-391-11	1	50 V	elect

Ref. No.	Part No.	Description			Ref. No.	Part No.	Description			
C129, 229	1-105-509-12	0.0047	50 V	mylar			RESISTORS			
C130, 230	1-105-685-12	0.1	50 V	mylar			All resistors are $\frac{1}{4}$ W, carbon type and in Ω unless otherwise indicated. (k = 1000, M = 1000 k)			
C131, 231	1-121-392-11	3.3	25 V	elect	R101, 201	{ 1-244-721-09	100 k	low noise (USA, Canada)		
C132, 232	1-121-651-11	10	16 V	elect		1-244-739-09	560 k	low noise (AEP, E, AUS)		
C133, 233	1-121-726-11	0.47	50 V	elect	R102, 202	1-242-668-11	620	(USA, Canada)		
C134, 234	1-105-521-12	0.047	50 V	mylar	R103	1-242-690-11	5.1 k			
C135, 235	1-105-517-12	0.022	50 V	mylar	R203	1-244-690-11	5.1 k			
C136, 236	1-107-060-11	390 p	500 V	silvered mica	R104	1-242-697-09	10 k	low noise		
C137, 237	1-107-004-11	100 p	500 V	silvered mica	R204	1-244-697-09	10 k	low noise		
C138, 238	1-105-501-12	0.01	50 V	mylar	R105, 205	1-210-832-11	6.8 M	low noise		
C139, 239	1-121-396-11	4.7	50 V	elect	R106, 206	1-242-734-09	360 k	low noise		
C140, 240	1-107-127-11	68 p	50 V	silvered mica	R107, 207	1-242-667-11	560			
C141, 241	1-121-395-11	4.7	50 V	elect	R108, 208	1-242-687-09	3.9 k	low noise		
C142, 242	1-121-395-11	4.7	50 V	elect	R109, 209	1-242-649-11	100			
C143, 243	1-107-253-11	15+18+22+27 p	500 V	silvered mica	R110, 210	1-242-721-09	100 k	low noise		
C144, 244	1-107-042-11	2.2 p	500 V	silvered mica	R111, 211	1-242-709-11	33 k			
					R112, 212	1-242-709-09	33 k	low noise		
C301	1-121-361-11	470	35 V	elect	R113, 213	1-242-717-11	68 k			
C302	1-121-361-11	470	35 V	elect	R114, 214	1-222-701-00	10 k (B), adjustable: playback equalizer			
C303	1-121-411-11	47	50 V	elect	R115, 215	1-221-979-00	22 k (B), adjustable: playback level			
C304	1-121-738-11	10	50 V	elect	R116, 216	1-242-687-11	3.9			
C305	1-121-420-11	220	10 V	elect	R117, 217	1-242-671-11	820			
C306	1-121-426-11	470	16 V	elect	R118, 218	1-242-701-09	15 k	low noise		
C307	1-121-426-11	470	16 V	elect	R119, 219	1-242-676-11	1.3 k			
C308	1-105-675-12	0.015	50 V	mylar	R120, 220	1-242-697-11	10 k			
C309	1-105-680-12	0.039	50 V	mylar	R121, 221	1-224-193-00	20 k (A), variable: REC VOLUME			
C310	1-129-795-11	3900 p	500 V	polystyrol	R122, 222	1-244-697-11	10 k			
C311	1-131-197-11	3.3	16 V	solid tantalum	R123, 223	1-244-695-11	8.2 k (AEP, E, AUS)			
C312	1-121-398-11	10	25 V	elect	R124, 224	1-242-705-11	22 k			
C313	1-105-833-12	0.01	50 V	mylar	R125, 225	1-242-702-11	16 k			
C314	1-105-821-12	0.001	50 V	mylar	R126, 226	1-242-719-09	82 k	low noise		
					R127, 227	1-242-721-09	100 k	low noise		
C501, 601	1-121-392-11	3.3	25 V	elect	R128, 228	1-242-721-09	100 k	low noise		
C502, 602	1-121-404-11	33	25 V	elect	R129	1-244-671-11	820			
C503, 603	1-129-896-21	0.012	$\pm 2\%$	100 V	polypropylene	R229	1-242-671-11	820		
C504, 604	1-129-701-21	0.01	$\pm 2\%$	100 V	polypropylene	R130, 230	1-242-695-11	8.2 k		
C505, 605	1-129-899-11	0.056	$\pm 2\%$	100 V	polypropylene	R131	1-244-717-11	68 k		
C506, 606	1-121-391-11	1	50 V	elect	R231	1-242-717-11	68 k			
C507, 607	1-107-103-11	6 p	50 V	silvered mica	R132, 232	1-242-683-11	2.7 k			
C508, 608	1-121-413-11	100	6.3 V	elect	R133, 233	1-242-689-11	4.7 k			
C509, 609	1-107-119-11	33 p	50 V	silvered mica	R134, 234	1-242-677-11	1.5 k			
C510, 610	1-121-398-11	10	25 V	elect	R135, 235	1-242-713-11	47 k			
C511, 611	1-121-409-11	47	16 V	elect	R136, 236	1-242-725-11	150 k			
C512, 612	1-105-670-12	0.0056	50 V	mylar	R137	1-244-705-11	22 k			
C513, 613	1-121-402-11	33	10 V	elect	R237	1-242-705-11	22 k			
C514, 614	1-121-651-11	10	16 V	elect	R138, 238	1-242-725-11	150 k			
C515, 615	1-129-794-21	0.0033	$\pm 2\%$	100 V	polypropylene	R139, 239	1-222-783-00	47 k (B), adjustable: record level		
C516, 616	1-121-392-11	3.3	25 V	elect	R140, 240	1-244-697-11	10 k			
C517, 617	1-127-025-11	3.3	10 V	solid aluminum	R141	1-242-699-11	12 k			
C518, 618	1-105-669-12	0.0047	50 V	mylar	R241	1-244-699-11	12 k			

When ordering 2% - tolerance resistor and capacitor, note "2%" in addition to part number.

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>		<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	
R142	1-242-693-11	6.8 k		R513, 613	1-242-721-09	100 k	low noise
R242	1-244-693-11	6.8 k		R514, 614	1-242-695-09	8.2 k	low noise
R143, 243	1-242-715-11	56 k		R515, 615	1-242-687-11	3.9 k	
R144, 244	1-242-733-11	330 k		R516, 616	1-210-856-11	68 k	$\pm 2\%$
R145, 245	1-242-673-11	1 k		R517, 617	1-210-815-11	910	$\pm 2\%$
R146, 246	1-242-691-11	5.6 k		R518, 618	1-242-689-11	4.7 k	
R147, 247	1-242-675-11	1.2 k		R519, 619	1-242-677-11	1.5 k	
R148, 248	1-242-713-11	47 k		R520, 620	1-242-721-11	100 k	
R149	1-242-625-11	10		R521, 621	1-242-719-11	82 k	
R249	1-244-625-11	10		R522, 622	1-242-701-11	15 k	
R150	1-242-633-11	22		R523, 623	1-242-723-11	120 k	
R250	1-244-633-11	22		R524, 624	1-242-695-11	8.2 k	
R151	1-242-688-11	4.3 k		R525, 625	1-210-850-11	300	$\pm 2\%$
R251	1-244-688-11	4.3 k		R526, 626	1-242-705-11	22 k	
R152, 252	1-242-699-11	12 k		R527, 627	1-242-695-11	8.2 k	
R153, 253	1-242-709-11	33 k		R528, 628	1-210-855-11	33 k	$\pm 2\%$
R154, 254	1-244-693-11	6.8 k		R529, 629	1-210-855-11	33 k	$\pm 2\%$
R155, 255	1-242-681-11	2.2 k		R530, 630	1-210-852-11	5.6 k	$\pm 2\%$
R156, 256	1-242-695-11	8.2 k		R531, 631	1-242-601-11	1	
R157, 257	1-242-677-11	1.5 k		R532, 632	1-242-701-11	15 k	
R158, 258	1-242-681-11	2.2 k		R533, 633	1-242-719-11	82 k	
R159, 259	1-221-978-00	4.7 k (B), adjustable: meter level		R534, 634	1-242-713-11	47 k	
R301	1-206-081-11	100	1W	metal oxide	R535, 635	1-242-727-11	180 k
R302	1-244-897-11	10 k	$\frac{1}{2}W$		R536, 636	1-242-727-11	180 k
R303	1-242-709-11	33 k		R537, 637	1-242-637-11	33	
R304	1-242-707-11	27 k		R538, 638	1-242-721-11	100 k	
R305				R539, 639	1-242-653-11	150	
R306	1-202-547-31	82	$\frac{1}{2}W$	composition			
R307	1-202-549-31	100	$\frac{1}{2}W$	composition	S1	1-516-268-00	lever slide, LIMITER
R308	1-202-557-31	220	$\frac{1}{2}W$	composition	S2	1-516-268-00	lever slide, DOLBY NR
R309	1-242-697-11	10 k		S3	1-513-273-00	slide, timing	
R310	1-242-721-11	100 k		S4	1-516-268-00	lever slide, TAPE SELECT	
R311	1-242-651-11	150		S5	1-514-346-00	leaf, muting	
R312	1-206-094-11	1.2 k	1W	metal oxide	S6	1-514-792-00	leaf, motor
R313	1-206-092-11	820	1W	metal oxide	S7	(1-516-259-11	seesaw, POWER (USA, Canada)
R314	1-242-619-11	1			(1-516-259-21	seesaw, POWER (AEP, E, AUS)	
R501, 601	1-210-858-11	200 k	$\pm 2\%$	S101, 201	1-514-976-21	slide, record/playback	
R502, 602	1-210-854-11	27 k	$\pm 2\%$				
R503, 603	1-242-729-09	220 k					
R504, 604	1-242-719-09	82 k					
R505, 605	1-242-699-09	12 k					
R506, 606	1-242-737-09	470 k					
R507, 607	1-242-737-09	470 k					
R508, 608	1-242-641-11	47					
R509, 609	1-210-853-11	6.2 k	$\pm 2\%$				
R510, 610	1-242-719-09	82 k					
R511, 611	1-242-721-09	100 k					
R512, 612	1-242-701-09	15 k					
SWITCHES							
R306	1-202-547-31	82	$\frac{1}{2}W$	composition	S1	1-516-268-00	lever slide, LIMITER
R307	1-202-549-31	100	$\frac{1}{2}W$	composition	S2	1-516-268-00	lever slide, DOLBY NR
R308	1-202-557-31	220	$\frac{1}{2}W$	composition	S3	1-513-273-00	slide, timing
R309	1-242-697-11	10 k		S4	1-516-268-00	lever slide, TAPE SELECT	
R310	1-242-721-11	100 k		S5	1-514-346-00	leaf, muting	
R311	1-242-651-11	150		S6	1-514-792-00	leaf, motor	
R312	1-206-094-11	1.2 k	1W	metal oxide	S7	(1-516-259-11	seesaw, POWER (USA, Canada)
R313	1-206-092-11	820	1W	metal oxide		(1-516-259-21	seesaw, POWER (AEP, E, AUS)
R314	1-242-619-11	1		S101, 201	1-514-976-21	slide, record/playback	
JACKS							
R501, 601	1-210-858-11	200 k	$\pm 2\%$	J101, 201	1-507-251-21	mini, MICROPHONE	
R502, 602	1-210-854-11	27 k	$\pm 2\%$	J301	1-507-282-00	binaural, HEADPHONE	
R503, 603	1-242-729-09	220 k					
R504, 604	1-242-719-09	82 k					
R505, 605	1-242-699-09	12 k					
R506, 606	1-242-737-09	470 k					
R507, 607	1-242-737-09	470 k					
R508, 608	1-242-641-11	47					
R509, 609	1-210-853-11	6.2 k	$\pm 2\%$				
R510, 610	1-242-719-09	82 k					
R511, 611	1-242-721-09	100 k					
R512, 612	1-242-701-09	15 k					
CONNECTORS							
R501, 601	1-210-858-11	200 k	$\pm 2\%$	CNJ101, 201	1-507-402-00	4 P, LINE IN (USA, Canada)	
R502, 602	1-210-854-11	27 k	$\pm 2\%$		1-507-403-00	4 P, LINE IN (AEP, E, AUS)	
R503, 603	1-242-729-09	220 k			1-507-402-00	4 P, LINE OUT (USA, Canada)	
R504, 604	1-242-719-09	82 k			1-507-403-00	4 P, LINE OUT (AEP, E, AUS)	
R505, 605	1-242-699-09	12 k					
R506, 606	1-242-737-09	470 k					
R507, 607	1-242-737-09	470 k					
R508, 608	1-242-641-11	47					
R509, 609	1-210-853-11	6.2 k	$\pm 2\%$				
R510, 610	1-242-719-09	82 k					
R511, 611	1-242-721-09	100 k					
R512, 612	1-242-701-09	15 k					
SOCKETS							
R501, 601	1-210-858-11	200 k	$\pm 2\%$	CNJ301	1-509-549-00	connector, REC/PB (AEP, E, AUS)	
R502, 602	1-210-854-11	27 k	$\pm 2\%$		1-509-482-00	socket, voltage selector (AEP, AUS)	
R503, 603	1-242-729-09	220 k			1-509-427-00	socket, voltage selector (E)	
R504, 604	1-242-719-09	82 k					
R505, 605	1-242-699-09	12 k					
R506, 606	1-242-737-09	470 k					
R507, 607	1-242-737-09	470 k					
R508, 608	1-242-641-11	47					
R509, 609	1-210-853-11	6.2 k	$\pm 2\%$				
R510, 610	1-242-719-09	82 k					
R511, 611	1-242-721-09	100 k					
R512, 612	1-242-701-09	15 k					

When ordering 2% tolerance resistor and capacitor, note "2%" in addition to part number.

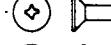
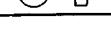
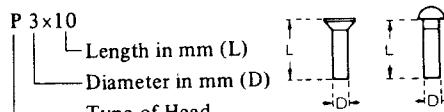
<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
MISCELLANEOUS					
CP301	1-231-057-31	encapsulated component C-R, 0.033 μ F + 120 Ω (USA, Canada)	M	8-834-015-01 1-534-526-00	motor, D-015G cord, power (USA, Canada)
	1-231-057-12	encapsulated component C-R, 0.033 μ F + 120 Ω (E)		1-534-551-22 1-534-587-00	cord, power (E) cord, power (AEP, AUS)
ME101, 201	1-524-078-21	meter, LEVEL	F1	1-532-205-00	fuse 200 mA (AEP, AUS)
PL1, 2	1-518-129-71	lamp, LEVEL meter; 4.5 V 40 mA		1-532-129-00	fuse 0.2A (E)
PL3	1-518-130-91	lamp, REC; 4.5 V 40 mA	F2, 3	1-532-084-11	fuse 100 mAT (AEP, AUS)
EH	8-825-506-00	head, erase (EF 135-36)	F4, 5	1-532-284-11 1-533-118-11	fuse 630 mAT (AEP, AUS) holder, fuse; 4 P (AEP, AUS)
RPH	8-825-584-00	head, record/playback (PF145-3602A6)		1-533-102-00	holder, fuse (E)

SECTION 7

HARDWARE

<u>Part No.</u>	<u>Description</u>		<u>Part No.</u>	<u>Description</u>			
SCREWS			RETAINING RINGS				
All screws are phillips type (cross recess type) unless otherwise indicated. (-): slotted head.			7-624-102-01	E	1.5		
7-621-255-25	P	2 x 4	7-624-104-01	E	2		
7-621-255-45	P	2 x 6	7-624-106-01	E	3		
7-621-259-01	PS	2.6 x 4	7-624-108-01	E	4		
7-621-259-15	P	2.6 x 3	7-624-118-01	E	2.5		
7-621-259-25	P	2.6 x 4					
7-621-305-35	(-) F	2 x 5					
7-621-559-52	K	2.6 x 8	7-623-105-02	2	(small)		
7-621-710-39	(-) SC	2 x 4	7-623-105-12	2	(middle)		
7-621-759-45	PSW	2.6 x 6	7-623-107-02	2.6	(small)		
7-621-759-75	PSW	2.6 x 10	7-623-107-12	2.6	(middle)		
7-621-770-62	B	2.6 x 5	7-623-108-02	3	(small)		
7-621-771-13	B	2.6 x 6	7-623-108-12	3	(middle)		
7-621-771-38	B	2.6 x 8	7-623-108-15	3	(middle)		
7-621-843-25	R	3.1 x 10, wooden	7-623-110-02	4	(small)		
7-628-253-15	PS	2 x 5					
7-628-253-35	PS	2 x 8					
7-628-254-03	PS	2.6 x 5					
7-628-254-05	PS	2.6 x 5					
7-628-254-12	PS	2.6 x 6	7-623-205-11	2			
7-628-254-25	PS	2.6 x 8	7-623-207-22	2.6			
7-682-548-04	B	3 x 8					
7-682-646-01	PS	3 x 5					
7-682-648-01	PS	3 x 8					
7-682-659-01	PS	4 x 5					
7-682-947-01	PSW	3 x 6	7-623-507-01		lug, 2.6; egg type		
7-682-953-00	PSW	3 x 20	7-671-112-01		steel ball, 2		
7-685-144-41	P	3 x 5, self-tapping	7-671-112-11		steel ball, 2.5		
7-685-145-23	P	3 x 6, self-tapping	7-684-013-01		nut, 3		

— Hardware Nomenclature —

P — Pan Head Screw		SC — Set Screw	
PS — Pan Head Screw with Spring Washer		E — Retaining Ring (E Washer)	
K — Flat Countersunk Head Screw		W — Washer	
B — Binding Head Screw		SW — Spring Washer	
RK — Oval Countersunk Head Screw		LW — Lock Washer	
T — Truss Head Screw		N — Nut	
R — Round Head Screw			
F — Flat Fillister Head Screw			
— Example —			
			

Sony Corporation

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9-954-122-01

— 45 —

77J0605-7
Printed in Japan

MC-Service

SUPPLEMENT

This supplement updates the service manual to include production changes starting with **Serial No. 45,601** and later.

File this supplement with the service manual.

Subject: Change and Addition of Circuit Board

No. 1
December, 1973

ADDED PARTS

Part No.	Description
A-2095-004-A	complete circuit board, filter
1-582-966-00	printed circuit board, shield
3-533-428-00	bracket, circuit board
3-533-430-00	shield
3-533-431-00	shield C
3-533-432-00	shield D

CHANGED PARTS

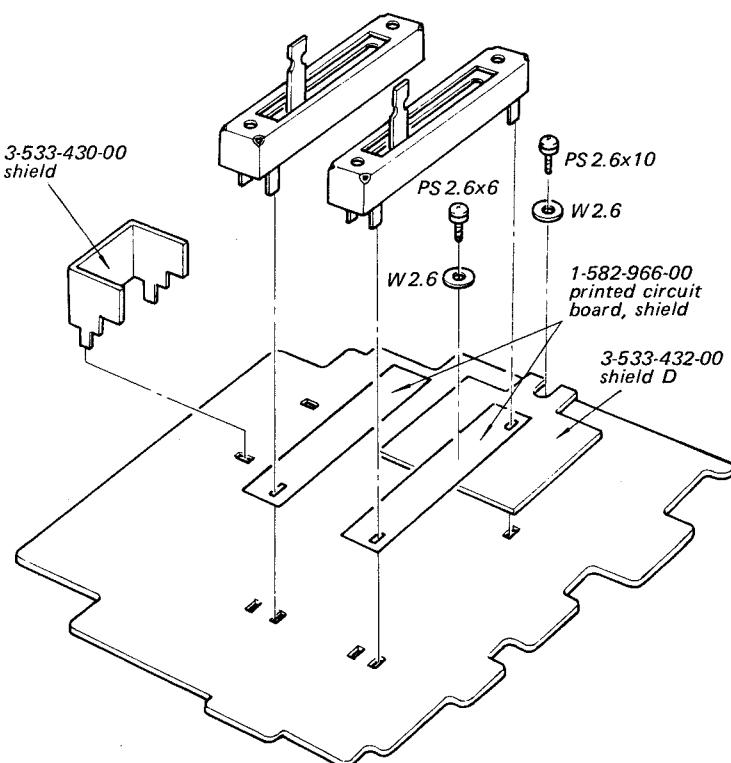
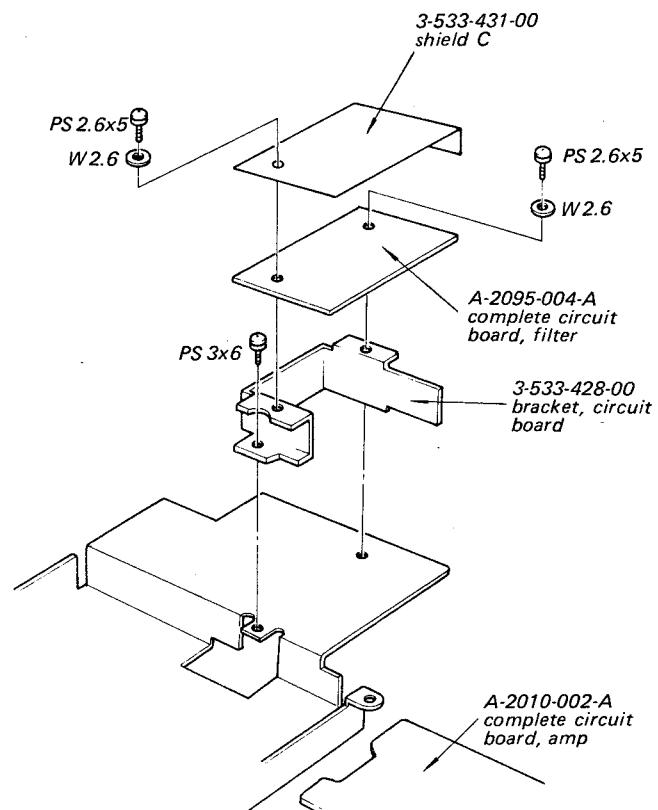
Part No.		Description
Former	New	
X-35333-51-0	A-2010-002-A	complete circuit board, amp
3-489-122-00	3-533-429-00	lever, lock

OMITTED PARTS

Part No.	Description
3-533-401-00	shield

SERVICE MANUAL

1. CHANGED PORTIONS OF EXPLODED VIEW



2. ELECTRICAL PARTS LIST

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
		COMPLETE CIRCUIT BOARDS		D503,603	Diode 1S1555
				D504,604	Diode 1S1555
	X-35133-52-0	DOLBY			
	A-2010-002-A	Amp			
	A-2095-004-A	Filter			
					COILS
		PRINTED CIRCUIT BOARDS	L101,201	1-407-561-00	33mH, microinductor
	1-539-812-00	Timing Switch	L102,202	1-407-658-00	35mH, trap
	1-582-440-00	Jack	L103,203	1-407-500-00	4.7mH, microinductor
			L104,204	1-407-500-00	4.7mH, microinductor
			L105,205	1-407-561-00	33mH, microinductor
		SEMICONDUCTORS			TRANSFORMERS
Q101,201	Transistor	2SC631A	T101,201	1-427-299-00	Output
Q102,202	Transistor	2SC631A	T301	1-442-167-00	Power (Canada)
Q103,203	Transistor	2SC633A		1-442-185-11	Power (USA)
Q104,204	Transistor	2SC631A		1-442-189-11	Power (AEP, AUS)
Q105,205	Transistor	2SC634A		1-442-201-11	Power (E)
Q106,206	Transistor	2SC634A	T302	1-433-132-00	Bias Osc
Q107,207	Transistor	2SC634A			
Q108,208	Transistor	2SC633A			
Q301	Transistor	2SA678			CAPACITORS
Q302	Transistor	2SC1384			
Q501,601	Transistor	2SC634A			All capacitors are μ F unless otherwise indicated. (p = $\mu\mu$ F, elect = electrolytic)
Q502,602	Transistor	2SC634A	C101,201	1-107-097-11	330p 50V silvered mica
Q503,603	Transistor	2SC632A	C102,202	1-121-651-11	10 16V elect
Q504,604	Transistor	2SC634A	C103,203	1-121-398-11	10 25V elect
Q505,605	Transistor	2SC634A	C104,204	1-107-137-11	180p 50V silvered mica
Q506,606	Transistor	2SC634A	C105,205	1-107-131-11	100p 50V silvered mica
Q507,607	Transistor	2SC634A	C106,206	1-107-141-11	270p 50V silvered mica
D101,201	Diode	VO6C	C107,207	1-121-420-11	220 10V elect
D102,202	Diode	10D-05	C108,208	1-105-680-12	0.039 50V mylar
D103,203	Diode	1T22	C109,209	1-105-513-12	0.01 50V mylar
D301	Diode	SIB01-02	C110,210	1-121-402-11	33 10V elect
D302	Diode	SIB01-02	C111,211	1-105-821-12	0.001 50V mylar
D303	Diode	SIB01-02	C112,212	1-121-398-11	10 25V elect
D304	Diode	SIB01-02	C113,213	1-105-668-12	0.0039 50V mylar
D305	Diode	SIB01-02	C114,214	1-105-665-12	0.0022 50V mylar
D306	Diode	SIB01-02	C115,215	1-105-665-12	0.0022 50V mylar
D307	Diode	MZ08	C116,216	1-121-416-11	100 25V elect
D501,601	Diode	1T22A	C117,217	1-131-211-11	0.22 35V solid tantalum
D502,602	Diode	1T22A	C118,218	1-131-211-11	0.22 35V solid tantalum
			C119,219	1-107-141-11	270p 50V silvered mica
			C120,220	1-121-409-11	47 16V elect

The word DOLBY is a trademark of Dolby Laboratories, Inc.

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>		<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	
C121,221	1-121-402-11	33	10V elect	C509,609	1-107-119-11	33p	50V silvered mica
C122,222	1-105-821-12	0.001	50V mylar	C510,610	1-121-398-11	10	25V elect
C123,223	1-107-115-11	22p	50V silvered mica	C511,611	1-121-409-11	47	16V elect
C124,224	1-121-651-11	10	16V elect	C512,612	1-105-670-12	0.0056	50V mylar
C125,225	1-107-113-11	18p	50V silvered mica	C513,613	1-121-402-11	33	10V elect
C126,226	1-121-402-11	33	10V elect	C514,614	1-121-651-11	10	16V elect
C127,227	1-121-409-11	47	16V elect	C515,615	1-129-794-11	0.0033 $\pm 2\%$	100V polypropylene
C128,228	1-121-391-11	1	50V elect	C516,616	1-121-392-11	3.3	25V elect
C129,229	1-105-505-12	0.0022	50V mylar	C517,617	1-127-025-11	3.3	10V solid aluminum
C130,230	1-131-211-11	0.22	35V solid tantalum	C518,618	1-105-669-12	0.0047	50V mylar
C131,231	1-121-392-11	3.3	25V elect	RESISTORS			
C132,232	1-121-651-11	10	16V elect	All resistors are in Ω , carbon type and $\frac{1}{4}W$ unless otherwise indicated. (k = 1000)			
C133,233	1-121-726-11	0.47	50V elect	R101,201	1-244-721-09	100k, low noise (USA, Canada)	
C134,234	1-105-518-12	0.027	50V mylar		1-244-739-09	560k, low noise (E, AEP, AUS)	
C135,235	1-105-517-12	0.022	50V mylar	R102,202	1-242-668-11	620 (USA, Canada)	
C136,236	1-107-060-11	390p	500V silvered mica	R103,203	1-242-690-11	5.1k	
C137,237	1-107-004-11	100p	500V silvered mica	R104,204	1-242-697-09	10k, low noise	
C138,238	1-105-501-12	0.001	50V mylar	R105,205	1-242-729-09	220k, low noise	
C139,239	1-121-396-11	4.7	50V elect	R106,206	1-242-687-09	3.9k, low noise	
C140,240	1-107-127-11	68p	50V silvered mica	R107,207	1-242-653-11	150	
C141,241	1-121-395-11	4.7	25V elect	R108,208	1-242-721-09	100k, low noise	
C142,242	1-121-395-11	4.7	25V elect	R109,209	1-244-709-11	33k	
C143,243	1-107-253-11	15+18+22+27p	500V silvered mica	R110,210	1-242-717-09	68k, low noise	
C144,244	1-107-042-11	2.2p	500V silvered mica	R111,211	1-242-693-11	6.8k	
C145,245	1-107-050-11	12p	500V silvered mica	R112,212	1-222-701-00	10k, adjustable	
C146,246	1-107-056-11	56p	500V silvered mica	R113,213	1-242-685-11	3.3k	
C147,247	1-107-015-11	47p	500V silvered mica	R114,214	1-242-687-11	3.9k	
C148,248	1-105-515-12	0.015	50V mylar	R115,215	1-221-979-00	22k, adjustable	
C301	1-121-361-11	470	35V elect	R116,216	1-242-679-11	1.8k	
C302	1-121-361-11	470	35V elect	R117,217	1-242-667-11	560	
C303	1-121-411-11	47	50V elect	R118,218	1-244-697-09	10k, low noise	
C304	1-121-738-11	10	50V elect	R119,219	1-242-679-11	1.8k	
C305	1-121-420-11	220	10V elect	R120,220	1-242-697-11	10k	
C306	1-121-426-11	470	16V elect	R121,221	1-224-193-00	20k (A), variable slide; REC VOLUME	
C307	1-121-426-11	470	16V elect	R122,222	1-244-697-11	10k	
C308	1-105-675-12	0.015	50V mylar	R123,223	1-244-695-11	8.2k (E, AEP, AUS)	
C309	1-105-680-12	0.039	50V mylar	R124,224	1-242-705-11	22k	
C310	1-129-795-11	3900p	500V polystyrol	R125,225	1-242-702-11	16k	
C311	1-131-197-11	3.3	16V solid tantalum	R126,226	1-242-719-09	82k, low noise	
C312	1-121-398-11	10	25V elect	R127,227	1-242-721-09	100k, low noise	
C313	1-105-833-12	0.01	50V mylar	R128,228	1-242-721-09	100k, low noise	
C314	1-105-821-12	0.001	50V mylar	R129	1-244-671-11	820	
C501,601	1-121-392-11	3.3	25V elect	R229	1-242-671-11	820	
C502,602	1-121-404-11	33	25V elect	R130,230	1-242-695-11	8.2k	
C503,603	1-129-896-11	0.012	$\pm 2\%$	R131,231	1-242-717-11	68k	
C504,604	1-129-701-11	0.01	$\pm 2\%$	R132,232	1-242-683-11	2.7k	
C505,605	1-129-899-11	0.056	$\pm 2\%$				
C506,606	1-121-391-11	1	50V elect				
C507,607	1-107-103-11	6p	50V silvered mica				
C508,608	1-121-413-11	100	6.3V elect				

Ref. No.	Part No.	Description
R133,233	1-242-689-11	4.7k
R134,234	1-242-677-11	1.5k
R135,235	1-242-713-11	47k
R136,236	1-242-725-11	150k
R137,237	1-242-705-11	22k
R138	1-242-725-11	150k
R238	1-244-725-11	150k
R139,239	1-222-783-00	47k, adjustable
R140	1-244-697-11	10k
R240	1-242-697-11	10k
R141,241	1-244-697-11	10k
R142,242	1-244-697-11	10k
R143,243	1-242-715-11	56k
R144	1-244-733-11	330k
R244	1-242-733-11	330k
R145,245	1-242-673-11	1k
R146,246	1-242-691-11	5.6k
R147,247	1-242-675-11	1.2k
R148,248	1-242-713-11	47k
R149	1-242-625-11	10
R249	1-244-625-11	10
R150	1-242-647-11	82
R250	1-244-647-11	82
R151,251	1-244-688-11	4.3k
R152	1-244-699-11	12k
R252	1-242-699-11	12k
R153,253	1-242-709-11	33k
R154,254	1-244-693-11	6.8k
R155,255	1-242-681-11	2.2k
R156,256	1-242-695-11	8.2k
R157,257	1-242-677-11	1.5k
R158,258	1-242-681-11	2.2k
R159,259	1-221-978-00	4.7k, adjustable
R160	1-242-693-11	6.8k
R260	1-244-693-11	6.8k
R301	1-206-081-11	100
R302	1-244-897-11	10k
R303	1-242-709-11	33k
R304	1-242-707-11	27k
R305	1-242-683-11	2.7k
R306	1-202-547-31	82
R307	1-202-549-31	100
R308	1-202-557-31	220
R309	1-242-697-11	10k
R310	1-242-721-11	100k
R311	1-242-653-11	150
R312	1-206-093-11	1k
R313	1-206-091-11	680
R314	1-242-601-11	1
R501,601	1-210-858-11	200k $\pm 2\%$

Ref. No.	Part No.	Description
R502,602	1-210-854-11	27k $\pm 2\%$
R503,603	1-242-729-09	220k, low noise
R504,604	1-242-719-09	82k, low noise
R505,605	1-242-699-09	12k, low noise
R506,606	1-242-737-09	470k, low noise
R507,607	1-242-737-09	470k, low noise
R508,608	1-242-641-11	47
R509,609	1-210-853-11	6.2k $\pm 2\%$
R510,610	1-242-719-09	82k, low noise
R511,611	1-242-721-09	100k, low noise
R512,612	1-242-701-09	15k, low noise
R513,613	1-242-721-09	100k, low noise
R514,614	1-242-695-09	8.2k, low noise
R515,615	1-242-687-11	3.9k
R516,616	1-210-856-11	68k $\pm 2\%$
R517,617	1-210-815-11	910 $\pm 2\%$
R518,618	1-242-689-11	4.7k
R519,619	1-242-677-11	1.5k
R520,620	1-242-721-11	100k
R521,621	1-242-719-11	82k
R522,622	1-242-701-11	15k
R523,623	1-242-723-11	120k
R524,624	1-242-695-11	8.2k
R525,625	1-210-850-11	300 $\pm 2\%$
R526,626	1-242-705-11	22k
R527,627	1-242-695-11	8.2k
R528,628	1-210-855-11	33k $\pm 2\%$
R529,629	1-210-855-11	33k $\pm 2\%$
R530,630	1-210-852-11	5.6k $\pm 2\%$
R531,631	1-242-601-11	1
R532,632	1-242-701-11	15k
R533,633	1-242-719-11	82k
R534,634	1-242-713-11	47k
R535,635	1-242-727-11	180k
R536,636	1-242-727-11	180k
R537,637	1-242-637-11	33
R538,638	1-242-721-11	100k
R539,639	1-242-653-11	150

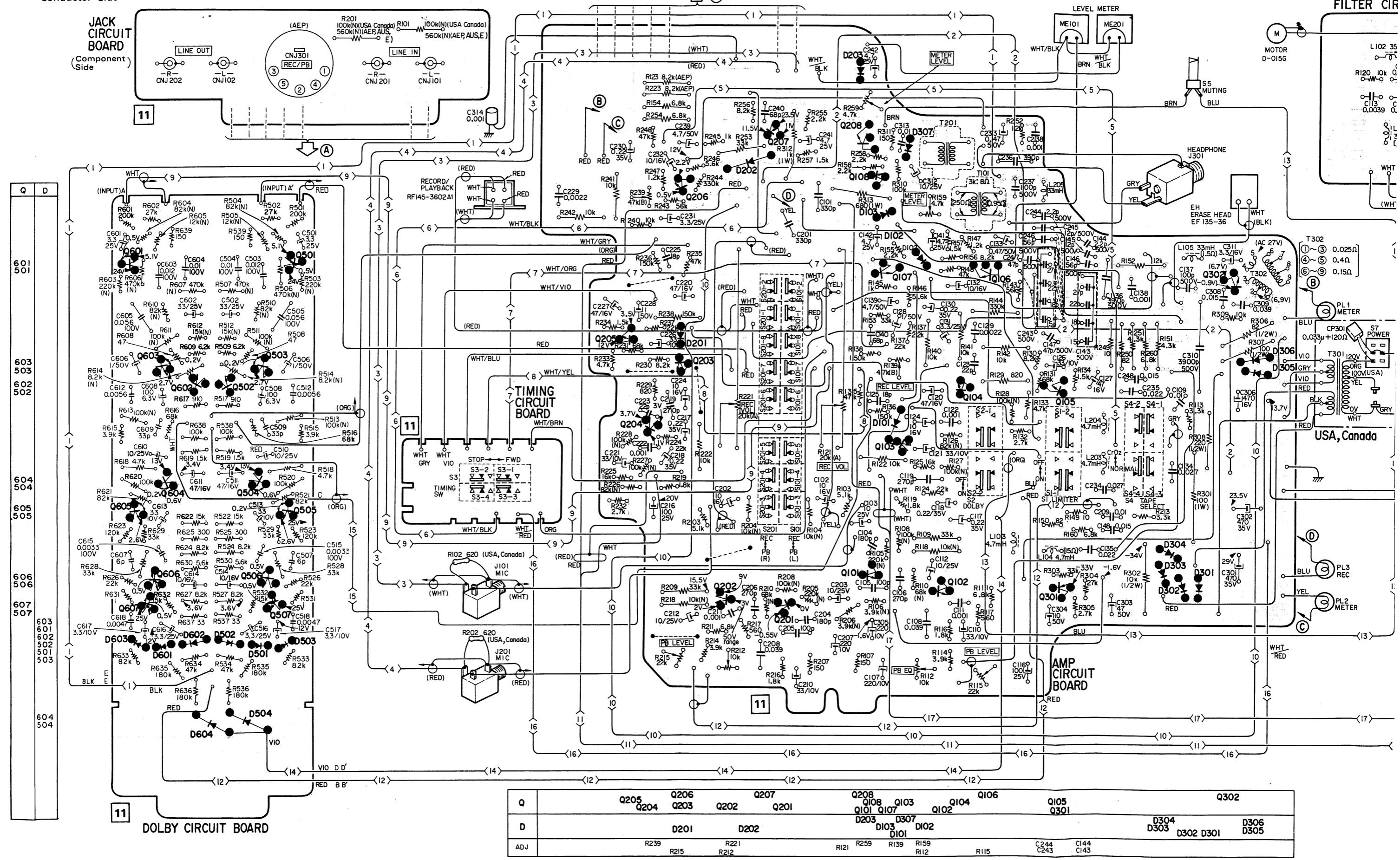
Ref. No.	Part No.	Description
		JACKS
J101,201	1-507-251-21	mini, MICROPHONE
J301	1-507-282-31	binaural, HEADPHONE
CNJ101,201	1-507-402-00	4p, LINE IN (USA, Canada)
	1-507-403-00	4p, LINE IN (E, AEP, AUS)
CNJ102,202	1-507-402-00	4p, LINE OUT (USA, Canada)
	1-507-403-00	4p, LINE OUT (E, AEP, AUS)
CNJ301	1-509-549-00	Connector, REC/PB (E, AEP, AUS)
		MISCELLANEOUS
E.H	8-825-506-00	Head, erase; EF135-36
F1	1-532-129-11	Fuse, 0.2A (E)
	1-532-205-11	Fuse, 200 mA (AEP, AUS)
F2	1-532-084-11	Fuse, 100 mA (AEP, AUS)
F3	1-532-084-11	Fuse, 100 mA (AEP, AUS)
F4	1-532-284-11	Fuse, 630 mA (AEP, AUS)

Ref. No.	Part No.	Description
S1	1-516-268-00	lever slide, LIMITER
S2	1-516-268-00	lever slide, DOLBY NR
S3	1-513-273-00	slide, timing
S4	1-516-268-00	lever slide, TAPE SELECT
S5	1-514-346-00	leaf, muting
S6	1-514-792-00	leaf, motor
S7	1-516-259-11	seesaw, POWER (USA, Canada)
	1-516-259-21	seesaw, POWER (E, AEP, AUS)
S101,201	1-514-976-21	slide, record/playback

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
JACKS					
J101,201	1-507-251-21	mini, MICROPHONE	F5	1-532-284-11	Fuse, 630 mA (AEP, AUS)
J301	1-507-282-31	binaural, HEADPHONE	M	8-834-015-01	Motor, D-015G
CNJ101,201	1-507-402-00	4p, LINE IN (USA, Canada)	PL1	1-518-129-00	Lamp, 4.5V 40 mA
CNJ101,201	1-507-403-00	4p, LINE IN (E, AEP, AUS)	PL2	1-518-129-00	Lamp, 4.5V 40 mA
CNJ102,202	1-507-402-00	4p, LINE OUT (USA, Canada)	PL3	1-518-130-71	Lamp, 4.5V 40 mA
CNJ102,202	1-507-403-00	4p, LINE OUT (E, AEP, AUS)	CP301	1-231-057-12	Encapsulated Component C-R, 0.033 μ F + 120 Ω (E)
CNJ301	1-509-549-00	Connector, REC/PB (E, AEP, AUS)		1-231-057-21	Encapsulated Component C-R, 0.033 μ F + 120 Ω (USA, Canada)
MISCELLANEOUS					
E.H	8-825-506-00	Head, erase; EF135-36	1-524-078-21	Meter, level	
F1	1-532-129-11	Fuse, 0.2A (E)	1-533-102-11	Holder, fuse (E)	
F1	1-532-205-11	Fuse, 200 mA (AEP, AUS)	1-533-118-11	Holder, fuse (AEP, AUS)	
F2	1-532-084-11	Fuse, 100 mA (AEP, AUS)	1-534-526-21	Cord, power (USA, Canada)	
F3	1-532-084-11	Fuse, 100 mA (AEP, AUS)	1-534-551-00	Cord, power (E)	
F4	1-532-284-11	Fuse, 630 mA (AEP, AUS)	1-534-580-13	Cord, power (AUS)	
			1-534-587-11	Cord, power (AEP)	
			1-509-427-12	Socket, voltage selector (E)	
			1-509-482-11	Socket, voltage selector (AEP, AUS)	

3. MOUNTING DIAGRAM

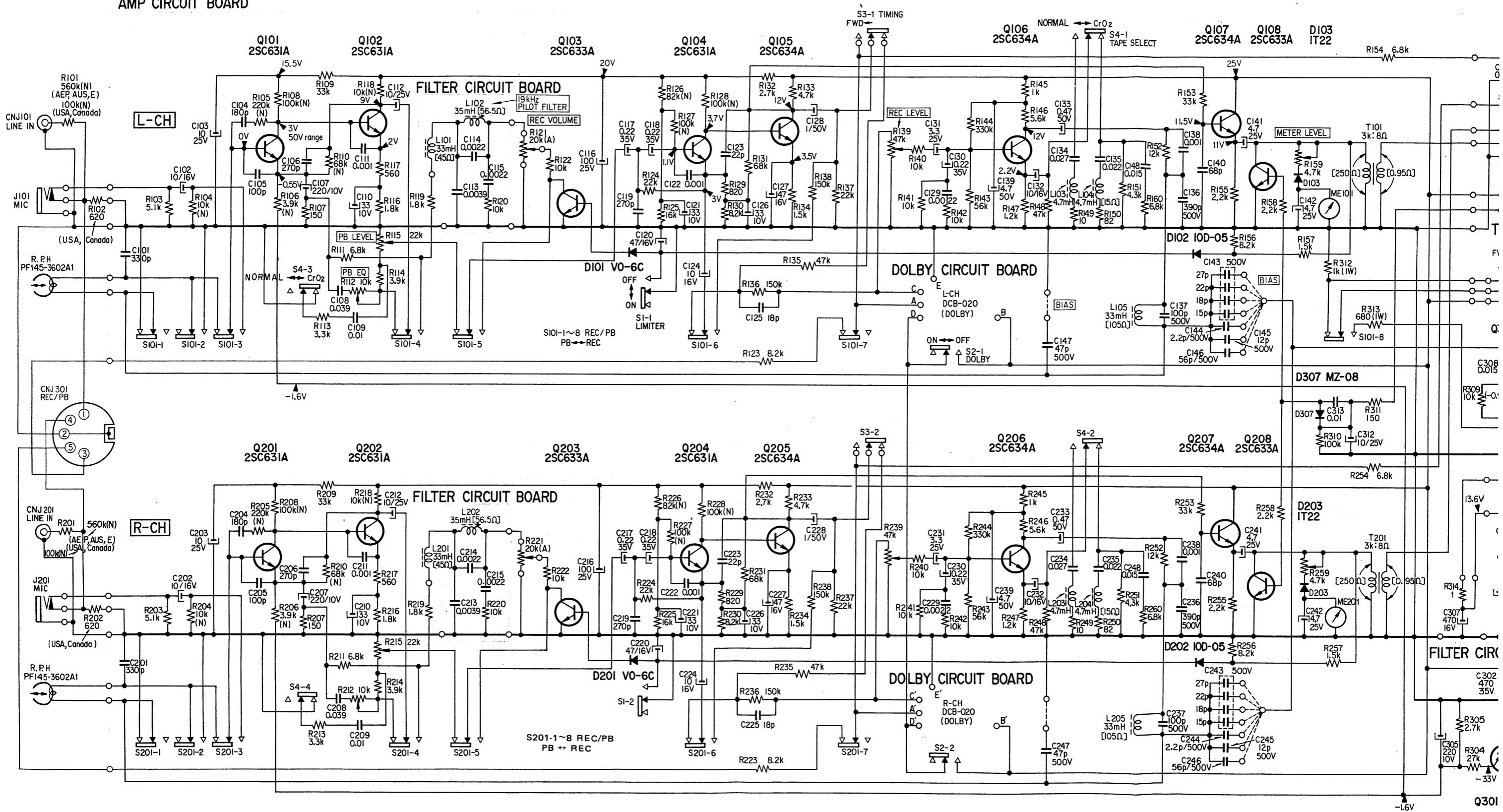
— Conductor Side —



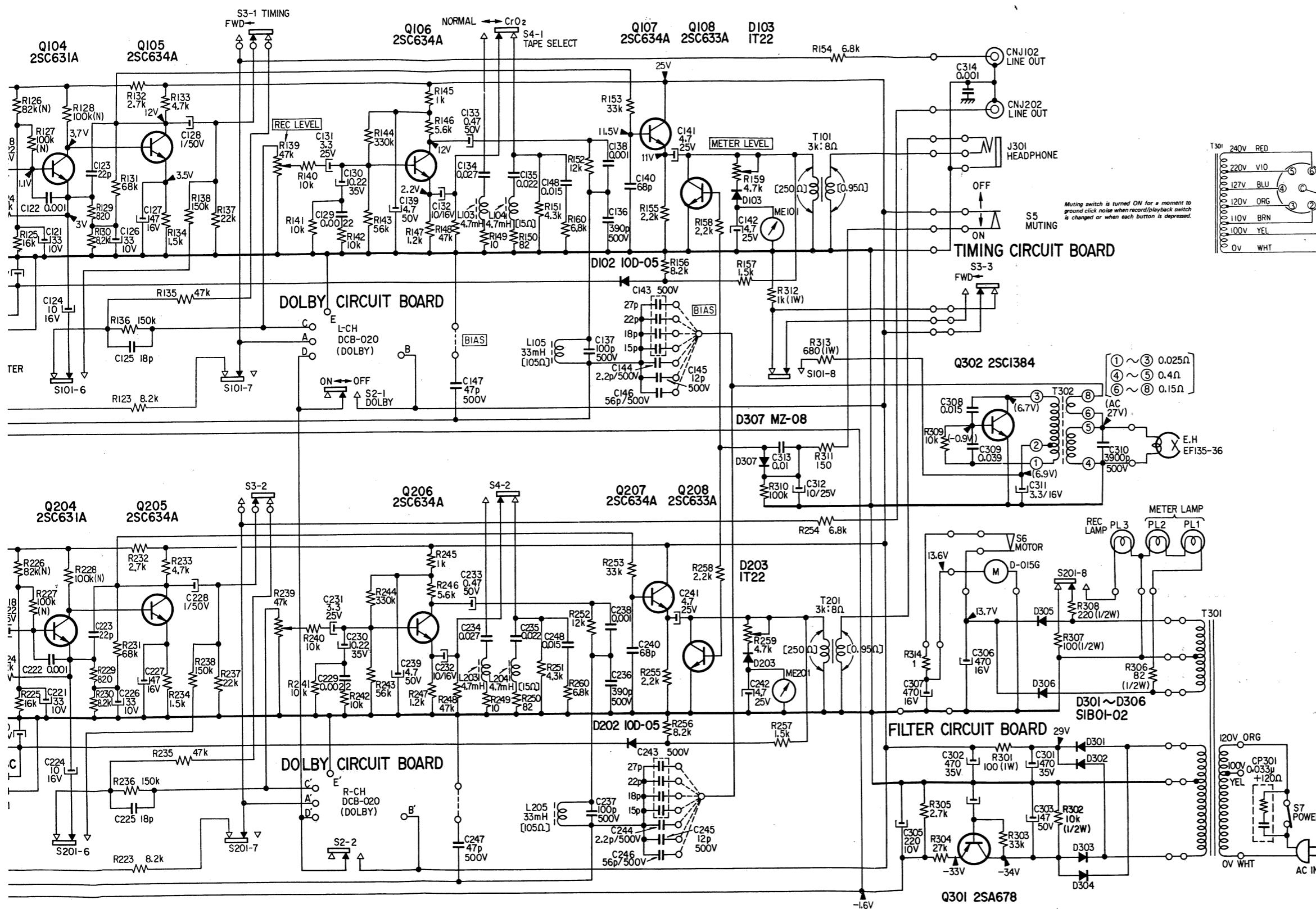
4. SCHEMATIC DIAGRAM

- Amp Circuit -

AMP CIRCUIT BOARD



Red Line Circuit: AEP, E, AUS

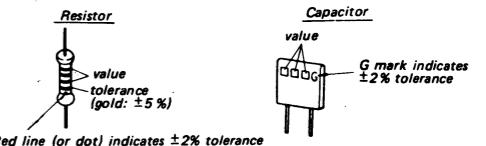


Note:

- All resistors and capacitors are in Ω and μF unless otherwise specified.
- Letter in () suffixed to variable resistor value indicates characteristics.
- : chassis ground
- Components for R-CH have the same values as for L-CH.
- (N) : Low noise resistor
- Voltage values shown are measured with a voltmeter (20k Ω /V). Variations may be noted due to normal production tolerances.

no mark : stop mode
 () : record mode
 AC voltage values across heads are measured with a VTVM in record mode.
 When replacing resistors and capacitors needing $\pm 2\%$ tolerance, use only those with red line (or dot) or G mark, as DOLBY system requires precise circuit operation.

2% Tolerance Identification

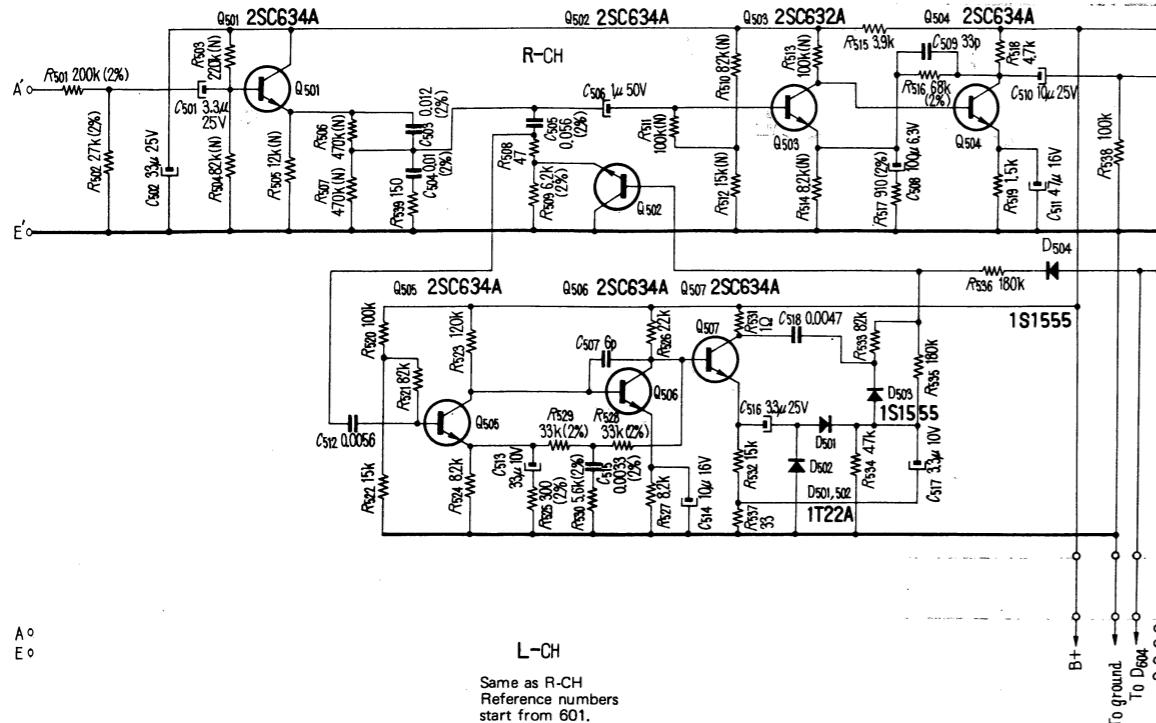


Switch mode:

Ref. No.	Switch	Mode
S101, 201	record/playback	playback
S1	LIMITER	ON
S2	DOLBY NR	ON
S3	timing	STOP
S4	TAPE SELECT	CrO ₂
S5	muting	OFF
S6	motor	OFF
S7	POWER	ON

5. SCHEMATIC DIAGRAM

- DOLBY Circuit -

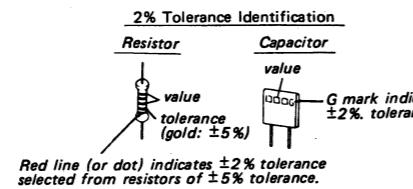


L-CH

Same as R-CH
Reference numbers
start from 601.

Note:

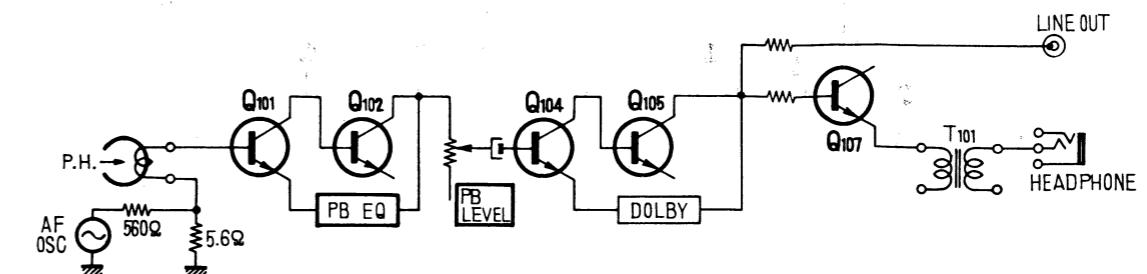
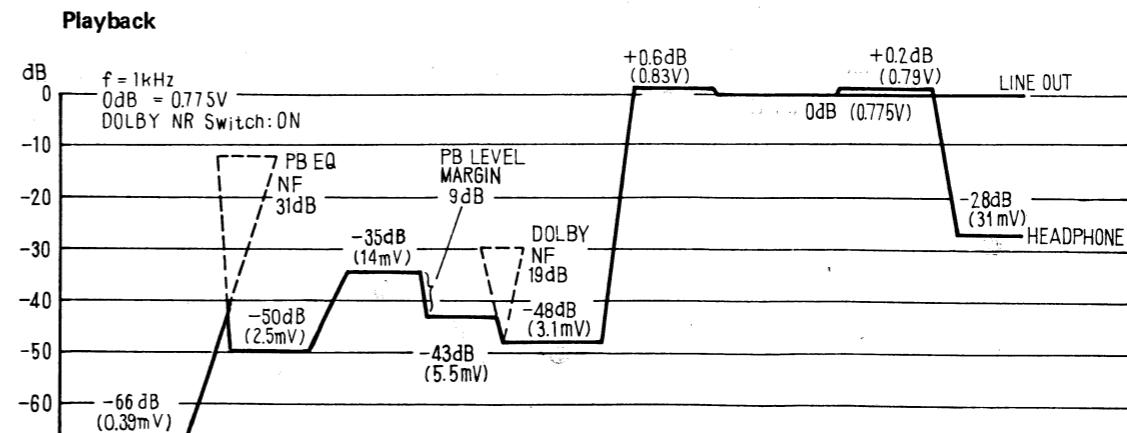
1. All resistors and capacitors are rated in Ω and μF unless otherwise indicated.
2. The letter (N) which is suffixed to rating values shows a low noise resistor.
3. Voltage values shown are measured with a voltmeter (20 k Ω /V) in playback mode. Variations may be noted because of normal production tolerances.
4. Components for R-CH are the same value as for L-CH.
5. When replacing resistors and capacitors needing $\pm 2\%$ tolerance, use only those with red line (or dot) or G mark, as DOLBY system requires precise circuit operation.



6. CHANGED PORTIONS OF ELECTRICAL ADJUSTMENT

Page	Former	New
20	4. Playback Equalizer Adjustment Adjust R114 (L-CH) R214 (R-CH)	R112 (L-CH) R212 (R-CH)
		Note: After the playback equalizer adjustment, setting the TAPE SELECT switch to CrO ₂ , play back the SONY test tape P-4-A81 and ensure that VTVM reading drops 4.5 dB ± 1 dB.
21	7. Record Bias Adjustment Input signal (1) 1 kHz, -90 dB (25 μV)	750 Hz, -90 dB (25 μV)
22	8. Record Level Adjustment Adjust R139 (L-CH) R239 (R-CH)	R140 (L-CH) R240 (R-CH)

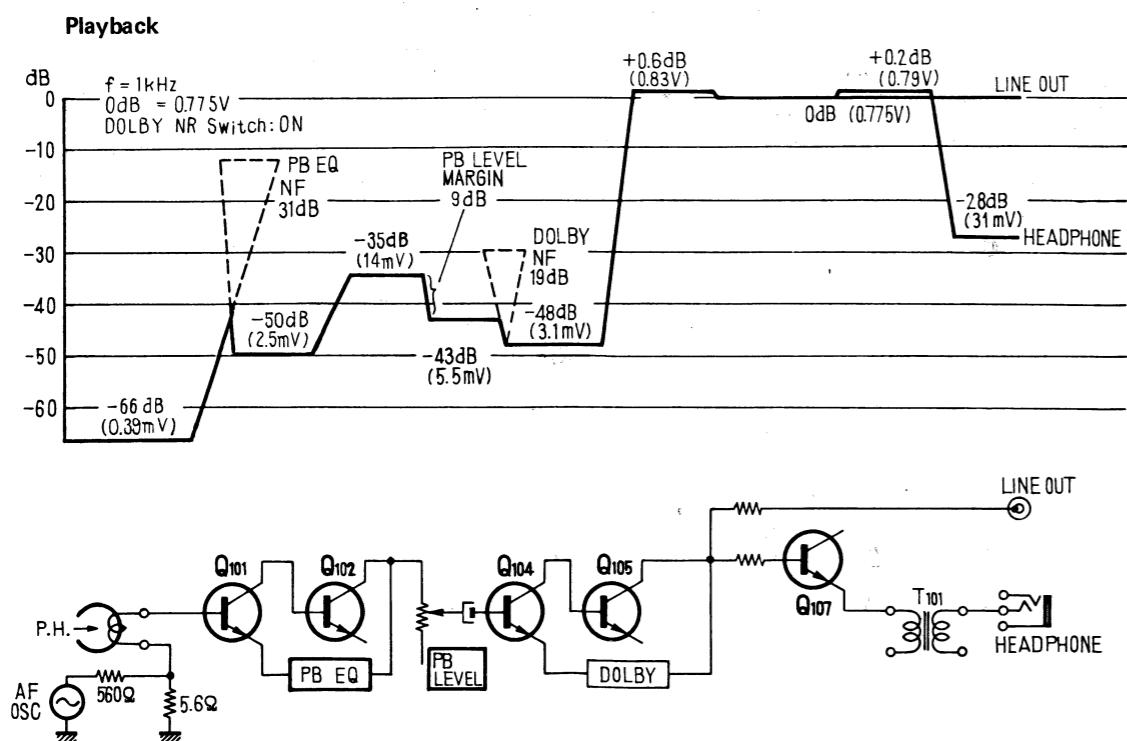
7. CHANGED PLAYBACK LEVEL DIAGRAM



6. CHANGED PORTIONS OF ELECTRICAL ADJUSTMENT

Page	Former	New
20	4. Playback Equalizer Adjustment Adjust R114 (L-CH) R214 (R-CH)	R112 (L-CH) R212 (R-CH)
		Note: After the playback equalizer adjustment, setting the TAPE SELECT switch to CrO ₂ , play back the SONY test tape P-4-A81 and ensure that VTVM reading drops 4.5 dB ± 1 dB.
21	7. Record Bias Adjustment Input signal (1) 1 kHz, -90 dB (25 μ V)	750 Hz, -90 dB (25 μ V)
22	8. Record Level Adjustment Adjust R139 (L-CH) R239 (R-CH)	R140 (L-CH) R240 (R-CH)

7. CHANGED PLAYBACK LEVEL DIAGRAM



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